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ENTRANCE FRONT, BLICKLING HALL, NORFOLK, ENGLAND.

THE BRICKBVILDER

VOL. 16 NO. 7 DEVOTED·TO·THE·INTERESTS·OF·ARCHITECTVRE·IN MATERIALS·OF·CLAY· JULY 1907

A Final Report on the San Francisco Fire.

FINAL reports on the San Francisco disaster seem to be something like Patti's farewells, but the latest which has come out is so important in its conclusions, and emanates from such recognized authorities, that it is deserving of more than passing notice. It takes the form of combined reports just submitted to the United States Geological Survey by Professor Frank Soule, Dean of the College of Civil Engineerng in the University of California; Captain John Stephen Sewell, Engineer Corps, U. S. A.; and Richard L. Humphrey, expert in charge of the Structural Materials Division of the Technologic Branch of the Geological Survey, and Secretary of the National Advisory Board on Fuels and Structural Materials.

These experts studied the condition of the buildings in San Francisco following the earthquake of April 18, 1906, and the fire which ensued. Their conclusions, from which we quote fully, do not count as news, for they are in many respects exactly what would have been anticipated; and, indeed, one striking fact about the lessons of the San Francisco fire is that they could nearly all have been safely predicted before the earthquake and fire took place. In other words, constructors and architects have for years known perfectly well how to thoroughly fireproof a building. There was no lack of good knowledge or good intent, it was chiefly a question of striking an average between the desired returns on investment and the bare necessity which compelled certain recognition of fireproofing expedients. Captain Sewell claims that commercial standards of fireproofing are dangerously inadequate, and that the Boston and the San Francisco fires, as well as many others fires and fire tests, have proven conclusively that commercial methods of fireproofing are inadequate to stand any real tests. None of these experts for a moment say that it is impossible to give absolute protection; they each recognize that that protection seldom is given, notwithstanding that architects, engineers and constructors know perfectly well what to do.

"The damage inflicted upon San Francisco from the direct and immediate effect of the earthquake was relatively small, being estimated at from three to ten per cent only of the total loss; but the subsequent and indirect effect was to paralyze the water supply and its distributing system, start a great conflagration, render impossible its extinguishment with the means at hand, cause the death of at least 500 human beings, burn approximately $500,000,000 worth of property, render houseless, homeless and miserable 200,000 people, and inflict remoter damages to business, commerce and labor, only to be estimated in the future. When we can see plainly, as we may, looking backward, that nearly all of this destruction and suffering might have been prevented by wise foresight and provision, we feel that we must send a warning to all the cities of the world. Any city that disregards this warning will be guilty of a great crime."

In the face of such facts, and no one questions them, there must be a pretty strong motive behind such deliberate disregard of the plain, straightforward lessons which every great fire in the last twenty-five years has taught us. It is a question of dollars and cents purely and simply, complicated, however, with the fact that insurance companies are so willing to underwrite almost any kind of risks. If an investor is told that for a certain outlay his building can be made absolutely fireproof, even against a conflagration, but that in order to secure such results his finished columns must be very large, his windows must be glazed with double wire glass, and most of them have protected shutters; that his building must be protected throughout with ample sprinklers and hose systems; that all his vertical openings must be stopped at each story or placed in continuous vertical wells, cut off from the rest of the building by fireproof enclosures, and that all these special precautions, which give him absolute security, will make his building less likely to rent than his neighbor's, who disregards all these special precautions, and will give him a return on his capital of only about two and three-quarter per cent, where his neighbor, who builds according to so-called "commercial" methods of fireproofing, will make four to four and one-half per cent, while paying really but little more insurance than is assessed upon the better building, under such circumstances it is small wonder that we have conflagration after conflagration, and that our so-called fireproof buildings seldom stand tests. It is really a question whether we can afford to use the extreme precaution. We must strike a mean between what is the very best, considered from the fireproofing standpoint, and the construction which will give the maximum accommodation to the tenant, the greatest facility for business, with the barest minimum of fire protection, and then take our chances on a conflagration. In fact, it is to be doubted whether it is really worth while to construct our buildings for such disasters as the San Francisco or the Baltimore fire. Rather should we limit our fireproofing to protection against the local disasters which affect only a few buildings at a time, and against

which the ordinary "commercial methods" have again and again proven to be sufficient. We cannot build our commercial buildings like dungeons nor fill our first floor space with huge encased columns, as Professor Soule would recommend, and the striking lesson of the San Francisco and the Baltimore fires seems to us to be, not that so many of our fireproof buildings go down in a conflagration, but that under modern conditions of business and traffic we cannot afford to construct a building to stand any more than a local fire. Of course these were not the conclusions reached by the commission making the report which we are considering. They were looking at it with the abstract idea of absolute resistance and they conceived some definite requirements, as follows:

"(*a*) Roofs, roof appurtenances and skylights should be given ample protection against fires from without. (*b*) A great excess of fire hose and apparatus beyond ordinary needs should be available. (*c*) A strong bond for fireproofing tiling, etc., both for girder and column protection, is essential. (*d*) Protection for front windows, as well as for side and rear ones, is of vital importance. (*e*) Good protection for steel frames and steel roof trusses in attics or the exposed or unusual places should be provided. (*f*) Liberal use should be made of fire retardent in windows and door transoms. (*g*) Wise and liberal use of concrete and reinforced concrete for girder and column fireproofing has proved its saving quality. (*h*) Interior fire protection and prevention by wells, pumps, sprinklers and water tanks vastly lessen fire-risk."

The report also takes up the very delicate question of the relative merits of terra cotta and concrete.

"The results at Baltimore and San Francisco did not, by any means, indicate that either hollow tile or concrete is altogether a failure or altogether a success. Both fires indicated very clearly that commercial methods of applying both materials are inadequate; both also indicated very clearly that successful results can be attained with both materials.

Captain Sewell says: "A conflagration never yields comparative results, but from such results as are available, I think there is no question that the best fire-resisting material available at the present time is the right kind of burned clay. By the right kind of burned clay is meant a good, tough, refractory clay, almost as refractory as fire clay, made into proper shapes and properly burned. Some commercial hollow tile work is made of good material, but, as a rule, that is the only good thing that can be said about it. As for concrete, there can be no question that good clinker concrete, made of well-burned clinkers, Portland cement and sand is a very efficient fire-resisting material. It is better than anything else except the better types of burned clay products, but the form in which cinder concrete is commercially applied is, on the whole, no better than the flimsy hollow tile work with which it competes; in fact, it is not certain that it may not be worse.

"If a hollow tile floor, for instance, loses its lower webs, the damage is very apparent, yet in the majority of cases, the floor remains true and capable of carrying considerable loads. Very often a cinder concrete floor which is even more seriously damaged remains true, for the reason that the fire which damaged it also removed its superimposed load before the damage was fully accomplished. This property of concrete, of maintaining a good face in spite of very real and very serious damage, is likely to lead the layman into very dangerous conclusions. Consequently, this property of concrete construction may lead to equally dangerous practice. Inasmuch as concrete is inevitably damaged, to a greater or less extent, by the application of a high temperature, it would seem that, in all cases where reinforced concrete floor construction is used, a furred ceiling below it should be absolutely required."

Lest it should be thought that San Francisco was specially faulty in its construction, Mr. Humphrey makes some pertinent recommendations:

"The lessons taught by the great calamities such as have befallen San Francisco, Baltimore and other cities are not regarded. It is quite probable that the new San Francisco will, to a large extent, be a duplicate of the former city in previous defects of construction. The defects of construction which are so strongly condemned by reason of their failure are no worse than those generally practiced throughout the United States. The same defects are common, and it is evident that the same results would follow an earthquake of equal intensity in another part of the country."

He, at the same time, however, recognizes what the local conditions led to. "The causes of the failures in San Francisco may be summarized as follows: First, dishonest design and construction, especially as regards municipal, county and state institutions. Second, an effort on the part of those qualified to design, and advise on building construction to meet the owners' demands and erect structures for the least possible cost, which tends to a departure from the principals of correct design; the result is a structure that will carry ordinary loads, but that fails when subjected to unusual conditions."

We cannot, however, refrain from repeating that all our conflagrations have shown the inability of a building which was constructed in what is classed as the approved commercial manner to withstand a severe conflagration unless the building were so heavily protected that it became unsuitable for its commercial purpose. There is another point, too, which is emphasized in every fire. If all our buildings were fireproofed, even only enough to resist a relatively slight local fire, a big conflagration would be almost an impossibility. The danger and the menace to our fireproof constructions arise from the cheaper work which constitutes the bulk of the buildings in nearly all the down-town portions of our large cities. We surely cannot afford to build our isolated fireproof structures to bear all the constructive sins of the second and third class work which surrounds them, and we are not likely to have a fireproof city until second and third class buildings are not allowed, and something more nearly approaching a general fire-resisting construction is adopted everywhere. "The importance and value of real protection will be appreciated when it is stated that a third-class building with a complete fire prevention plant in the nature of fire doors, wire glass partitions, sprinklers, etc., is insured for less than a first-class building not so equipped." In other words, fireproof construction, so-called, has been shown again and again to be efficient, provided isolated examples are not called upon to bear the burden of the constructive sins of a whole city.

English Brickwork Detail.

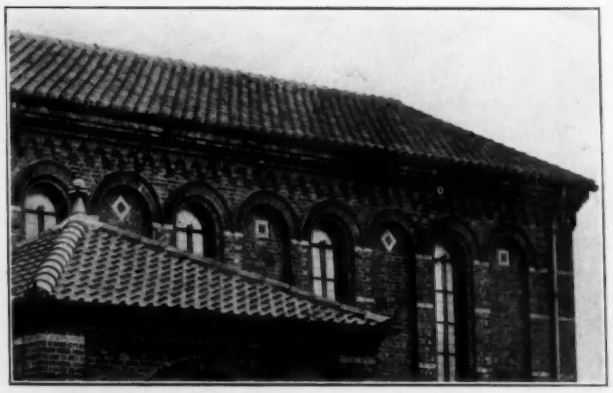
BRICKWORK detail is a refinement which appeals particularly to the cultured eye of the architect, and it is surprising that not more of it is seen on the average house of to-day, especially as such embellishment can be carried out at comparatively small cost; for example, in the suburban villa it would be far preferable if some design in brickwork, corbelled out, were adopted in place of the usual stone capitals, with their coarse carvings, on either side of the entrance porch. It requires, however, considerable fecundity of invention to design fresh brickwork detail, and that, perhaps, is one of the reasons why it is not more extensively introduced. The numerous examples of Northern Italy particularly show the possibilities of most beautiful treatment; the Netherlands, too, are equally suggestive. There is first the variation of surface obtainable by the use of bricks of differing color, forming a wall of diversified effect, instead of one of mechanical sameness; there is also surface pattern, or diaper, as exemplified in many of the old buildings at Cambridge — on John's College and Jesus College especially. Then there are cornices and strings, herring-bone patterns, copings with bricks laid diagonally, and a multitude of other treatments possible with brickwork. A good deal of such work is to be seen on old English buildings, and the accompanying illustrations are suggestive of the possibilities.

GATE PIER.
Inigo Jones, Architect.

In tracing the early history of brickwork in England, it will be found that the use of it was almost exclusively confined to the eastern, midland and southern counties. It was to the eastern counties — Norfolk and Suffolk — that the Flemings came, bringing with them men skilled in the use of brick; indeed, Reginald Blomfield points out, in his history of the Renaissance in England, the facts that it was in Norfolk and Suffolk that brickwork was first used again since the Roman occupation; that these were the counties which received the earliest Flemish settlements; and that the dates of these settlements and of the reintroduction of brickwork almost coincide make it probable that we owe the revived use of brickwork to the Flemish immigrants, and that, at first, the bricks themselves were imported from the Netherlands. The earliest instance of the use of brickwork in England since the Roman occupation is said to be Little Wenham Hall, in Suffolk, supposed to have been built about 1260. Therafter its use became more and more extended, and by the middle of the sixteenth century, brickwork was fairly established in England. Throughout the reign of Henry VIII brickwork was freely employed, not only for plain building, but for ornamental work. Molded panels, tracery and cusping were executed in brickwork and terra cotta; but from the middle of the sixteenth to the middle of the seventeenth century its use for ornamental purposes appears to have been practically abandoned. It does not seem to have occurred to English builders to employ it for molded strings, pilasters, cornices and other details till the middle of the seventeenth century. About that time rubbed brickwork with very fine joints came into vogue. Wren introduced this phase in the early part of the reign of Charles II, and he appears to have been much disposed towards such work.

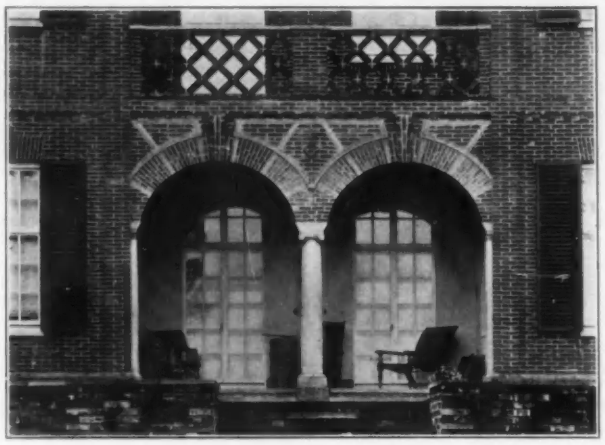
CHIMNEYS, HAMPTON COURT.

Associated with the modern revival are such names as Norman Shaw and Philip Webb, Nesfield and Butterfield. It was those men who rejuvenated English domestic architecture and broke down the ideas about brick being an inferior material, so that to-day we see it used extensively for all classes of buildings. The late J. F. Bentley was a great builder in brick, and there is, perhaps, no architect of modern times who has displayed a greater ability in the design of brickwork detail, as witness Westminster Cathedral (the bricks throughout this great building are thinner than the usual type, being two inches instead of three inches): the herring-bone pattern would seem to have been a favorite of his, it having been largely adopted on Westminster Cathedral.



CORNICE AND WALL OF CREMATORIUM.
Ernest George & Yeates, Architects.

Another piece of good modern brickwork detail is that shown on the school at Birmingham by Buckland & Haywood-Farmer. The wall, it will be noted, is crowned by a very ingeniously-de-



LOGGIA AND BALCONY.
R. Weir Schultz, Architect.

signed coping in special-made brick, and the whole design is eloquent of the same freshness of treatment, the lead down pipes, with their modeled heads, completing a scheme of much interest.

Ernest George has been a great designer in brick. For inspiration he has drawn on Continental work. A recent example of his is the crematorium in North London. The wall surface is treated with a series of recessed panels with small arches turned over them at the top in brick and tile, above which is a cornice very cleverly designed and most refined in effect.

CARVED BRICK GABLE.

Many other architects who have a happy facility in their use of brickwork might be cited; for instance, Mr. Lutyens and H. Percy Adams, works by both of whom have been given in former issues of THE BRICKBUILDER. Mr. Schultz, too, is a fertile designer in brick (two photographs of detail of a house at Swaffham, in Suffolk, are here given as illustrations of his work), while Ernest Newton and others of the same school will be remembered in the same connection, though they do not especially concern themselves with brickwork detailing, relying chiefly for their effect on the main design and walling, as in Georgian work.

Perhaps the most striking uses of brickwork are to be found in the chimneys that adorn many of the old mansions, and many of the new ones, too. They are the least appreciated and the most characteristic features of modern houses; in fact, they may be taken as a very good gauge of the whole design, for if the chimneys are well proportioned one may be fairly certain that the rest of the work is of equal merit, and by contra, a badly designed chimney is the mark of an inefficient architect. The public has no idea that such is the case, regarding chimney stacks as things that have to be, just as drains have to be, but calling for no particular notice. The reason for this is not far to seek. The majority of chimneys are feeble efforts architecturally, and more often than not in towns the owner of the property quickly crowns them with gaunt "tallboys," or zinc pots to induce more draught in the flue; these hideous zinc pots being often extended into pipes and carried, four or five abreast, right up the face of adjoining property in order to secure a sufficient draught. It may be that the architect was to blame in the first instance for not having done his work properly, making his chimneys too stunted, because there appears to be just as much uncertainty in regard to this matter as there is in regard to acoustics; on the other hand, the builder or the building owner frequently has a mania for these pots, and introduces them on every occasion, as the easiest and cheapest means of improving a defect, quite irrespective of their unsightliness. The skyline of a building is a most difficult matter for the architect's consideration, and chimneys are a great feature in the case; they may either make or mar a design.

The chimney is, of course, a late development in house design. In England chimney stacks did not come into common use before the reign of Henry the Eighth. First there was the open fire in the center of the "hall," the smoke from which found its way up into the roof, and escaped through louvres. Then came the flue in the wall — one very large flue accommodating half the household around the fire at its base. Examples of such flues are to be seen in scores of mansions and castles. It was found, however, that such a single great opening

PORTION OF WEST FRONT, WESTMINSTER CATHEDRAL.
J. F. Bentley, Architect.

GARDEN WALL.
R. Weir Schultz, Architect.

had many disadvantages, by reason of insufficient draught up and too much draught down; hence, smaller flues were introduced, either carried up directly into a single chimney stack or gathered into a group. At Eton College a great number of single chimney stacks are to be seen; they occur just where the flue happened to be, no attempt being made to bring them from the edge when they came at the front of the elevation. From the accompanying illustrations it will be seen that these chimneys are very beautiful examples of brickwork design. The many ways in which they are treated is particularly noticeable. Sometimes the brick is honey-combed, sometimes a diagonal pattern is formed over the face, or a series of spirals, lozenges and other figures. There has been some question raised as to how the work was executed, whether it was molded in the plastic state or worked when finished. A suggestion has been made that the chimney was built up completely in clay, then molded into the desired pattern, and the mass afterwards cut up into bricks and burnt. To the writer it seems, however, that no such process was followed, but rather that the bricks were built up in the usual way and then cut into shape with some sort of chisel or axe. But in whatever way the work was done, it is particularly beautiful. These chimneys at Eton date about 1600 (though they have been restored in parts). They are built of bricks about two inches thick and are corbelled out at the top, with projecting points around. Most of them are octagonal on plan.

CHIMNEYS, ETON COLLEGE.

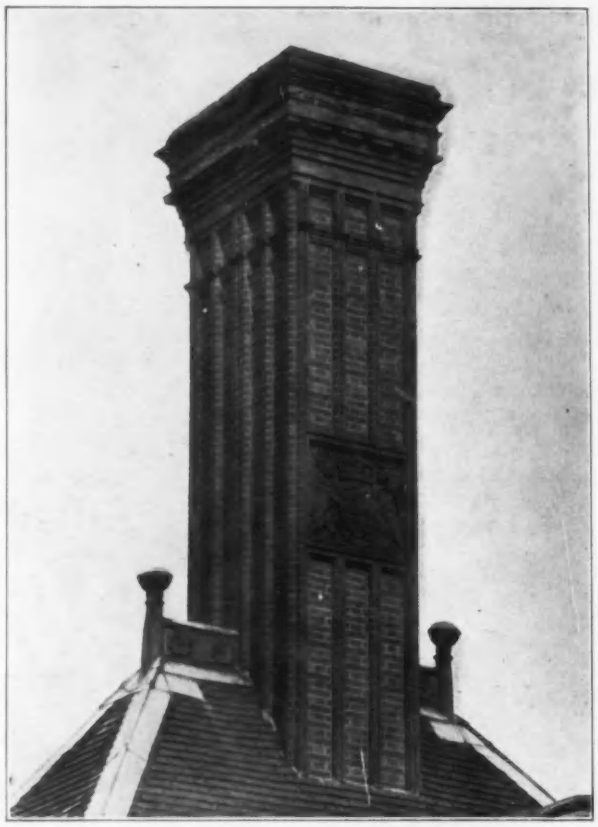
At Hampton Court some of the finest specimens of brick chimneys in the kingdom are to be found. They are most varied in treatment, not only spirals and other simple patterns being worked on them, but intricate interlacing diamond shapes, and all manner of detail. They are carried out in red brickwork. Counting in the modern way, the cost of such chimneys, worked as they were worked, would be very great, but money was of no account in the building of Hampton Court Palace, and it seems likely that the workman who fashioned the chimneys had a perfectly free hand for his invention.

Other old examples shown among the accompanying illustrations are those at Seddlescombe and Cranbrook, in Kent. Both are of ordinary red brickwork with wide mortar joints—the former a sturdy type, showing what effective use can be made by alternate recessing and corbelling, and the latter a stack of three flues grouped together in a very effective manner. As another type, but of later date (Wren period), is the big chimney at Chelsea Hospital, with its refined stone molding at the top. All the main chimneys of Chelsea Hospital are treated in this style, and there is a feeling of strength and solidity about them in keeping with the rest of the building; they are in proportion to the whole, not meager offshoots that distract the eye and disturb the skyline.

Coming to modern times, there is here shown the chimney by Nesfield on the lodge at Kew Gardens. Nesfield was one of that band of zealous workers who came after the Gothic Revival had exhausted itself of extravagances, and among the most interesting specimens of his work are the lodges which he built at Regent's Park and Kew Gardens. It will be seen that this chimney at Kew is most carefully proportioned, and the treatment of it in a series of panels divided by molded brick ribs is very well chosen, while the Royal Arms inset on the face give that added charm which heraldry, well placed, always has. Special note should also be taken of the cap of this chimney.

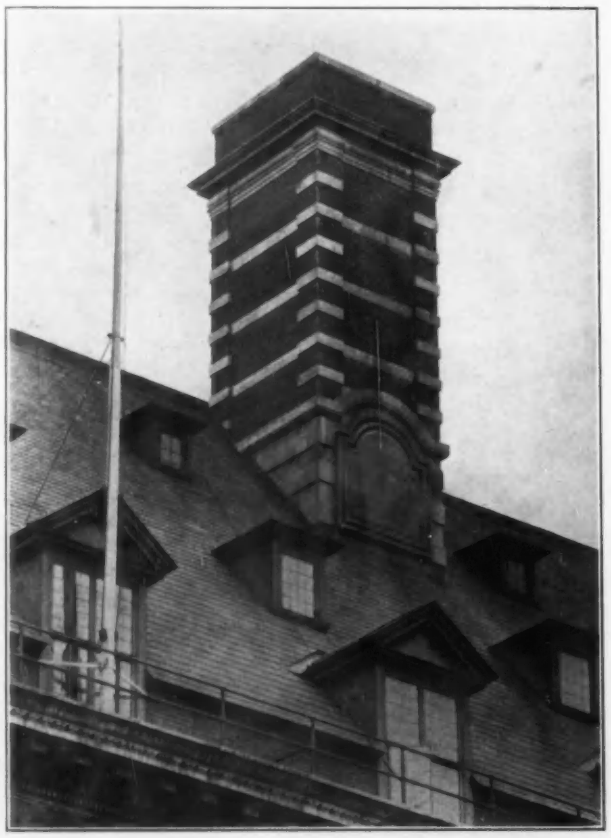
As representative of Norman Shaw's work, there is given a view of one of the chimneys on New Scotland Yard. It is thoroughly characteristic of him, with its stone bands and the panel at the base, and it has a predominant feeling of strength, the corners being brought out as slight pilasters carrying the cornice.

UPPER PART OF SCHOOL AT BIRMINGHAM.
Buckland & Haywood-Farmer, Architects.

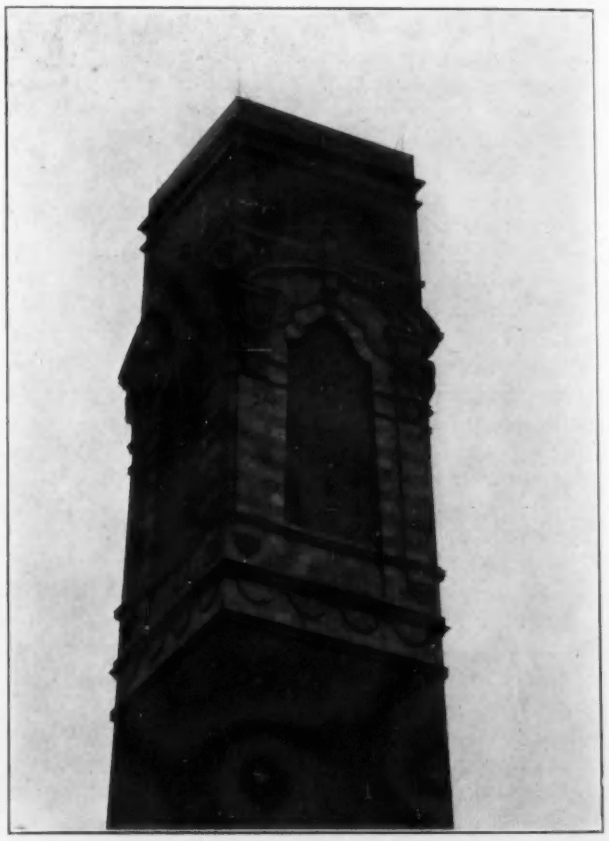


CHIMNEY BY W. EDEN NESFIELD, ARCHITECT.

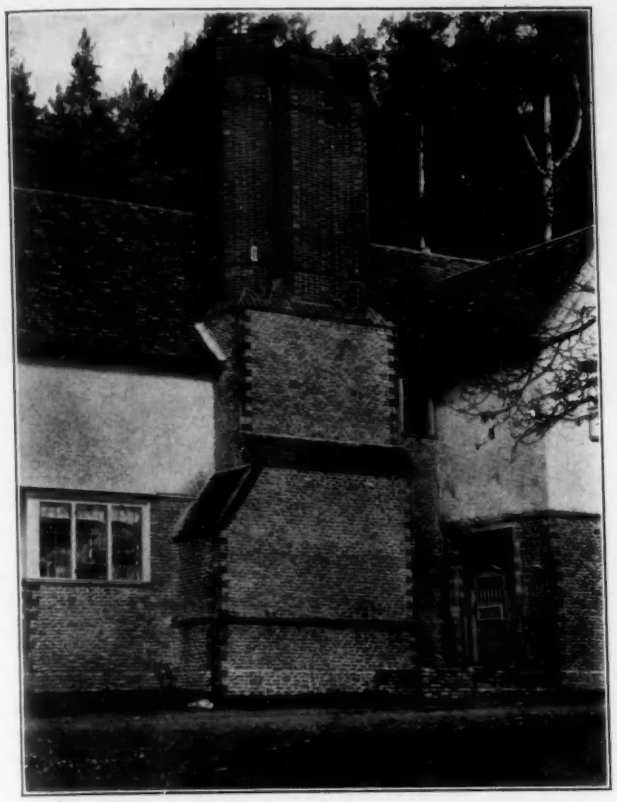
CHIMNEY ON CHELSEA HOSPITAL.



CHIMNEY ON NEW SCOTLAND YARD, LONDON.
Norman Shaw, Architect.

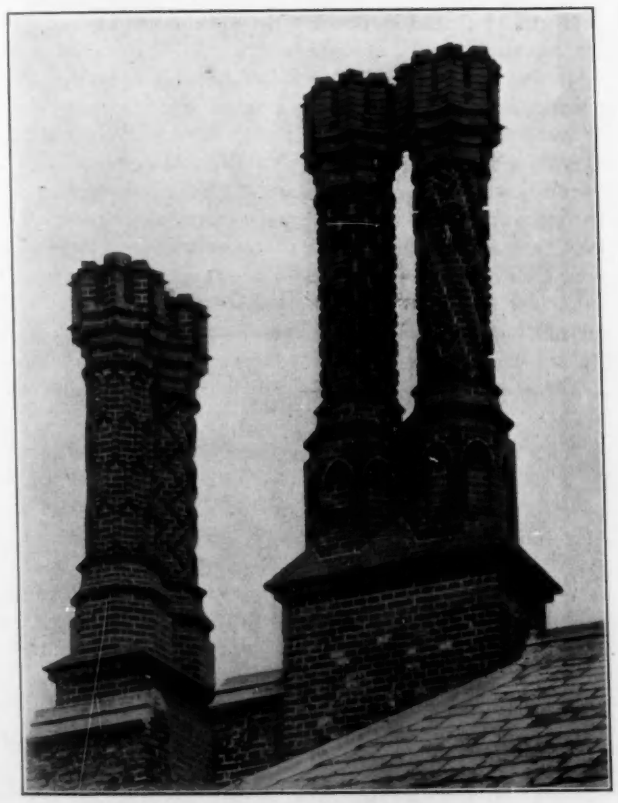


TOP OF CHIMNEY SHAFT, ELECTRICITY PLANT, LONDON.
C. Stanley Peach, Architect.



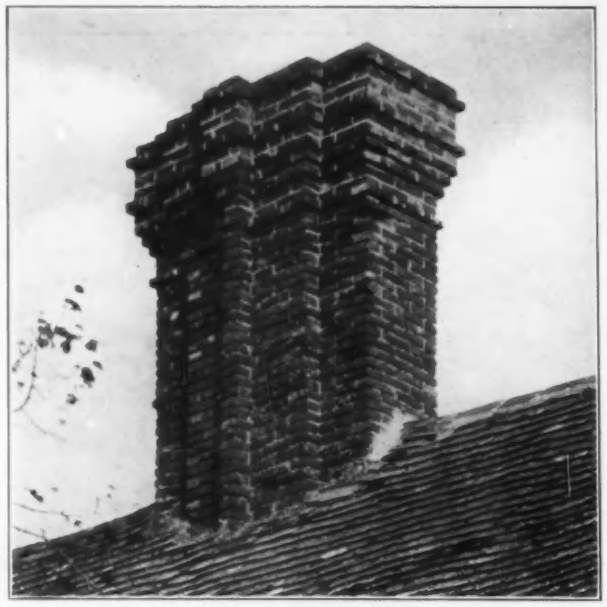
CHIMNEYS BY E. L. LUTYENS, ARCHITECT.

OLD CHIMNEY AT CRANBROOK, KENT.



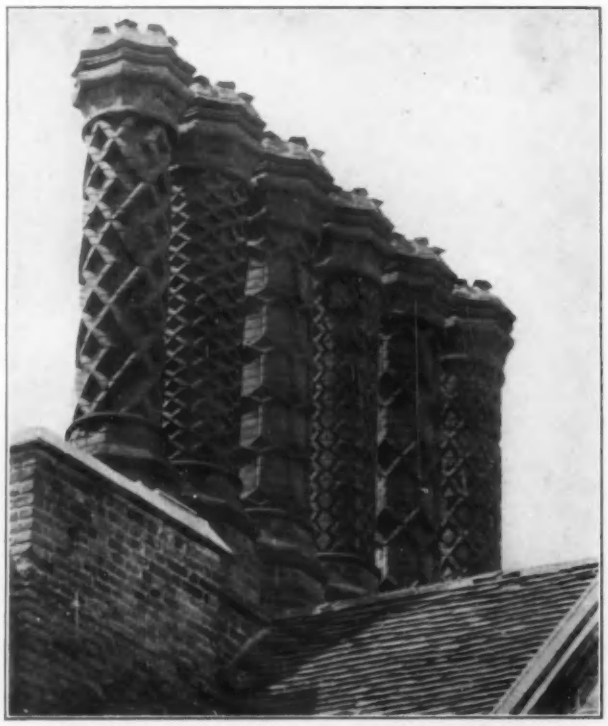
CHIMNEYS, HAMPTON COURT.

CHIMNEYS, ETON COLLEGE.



OLD CHIMNEY AT SEDDLESCOMBE, KENT.

Of the remaining examples shown, that of E. L. Lutyens speaks for itself as a clever design (Mr. Lutyens being especially well known as a most brilliant architect in brick), while Stanley Peach's chimney at North London calls for notice as an attempt by an architect of ability to give some architectural quality to the stack of an electricity generating station; the work being carried out in common brick, with terra cotta blocks and strings in blue brick.



CHIMNEYS (SIXTEENTH CENTURY), HAMPTON COURT PALACE.

Thus it will be seen that there are many possibilities for architectural treatment of the brick chimney, not only on buildings of the domestic class, but also on business and trade buildings. The architect recognizes this, and it is to be wished that with an improving taste the public, too, will learn to appreciate the qualities of good brickwork detail.

MR JOHN BELCHER, A.R.A.

THIS year's recipient of the Royal Gold Medal, instituted by Queen Victoria for the promotion of architecture, is Mr. John Belcher, A.R.A., who is second to none in his profession in appreciating the value of the collaboration of the painter and the sculptor with the architect's work. Sent as a boy to France to study and sketch, with special regard to the Renaissance School, Mr. Belcher none the less evinced an early tendency towards a phase of Gothic architecture. He soon, however, returned to the principles inculcated by his father, with whom he worked first as a pupil and then as a partner. In the words of the President of the R.I.B.A., in presenting Mr. Belcher with the Gold Medal last month, it is peculiarly fitting that one who has so greatly distinguished himself in English Renaissance in these later days should have erected his greatest works in the city where the earliest masterpieces of that style are found. Mr. Belcher was elected an Associate of the Royal Academy in 1900. As President of the R.I.B.A. last year he took the chair at the meetings of the International Congress of Architects held in July. He has made some valuable contributions to the literature of his profession, his most recent work being "Essentials in Architecture."

WIND PRESSURE.

MR. STANTON and Mr. Bairstow have made some experiments at the National Physical Laboratory which bring out a new and practically very valuable fact, — namely, that pressure is not the same on large surfaces as on small experimental models. If, for example, a given wind velocity is brought to bear on a square foot of surface it will be 18 per cent less per square foot than if it were directed on 100 square feet of surface. It was demonstrated, too, that this relation is constant for flat forms, however complicated. A builder or engineer who knows that a structure may be exposed to a wind of eighty miles per hour and that the pressure per square foot as determined by model in, say, x pounds, should allow for his larger construction 20 per cent extra. The reason for this seems to be the more thoroughly reduced pressure on the lee side of a larger area. — *London Telegraph.*

ITALIAN TERRA-COTTA.

CLAY during a long period was not only used for the purpose of solid construction in Italy, but also molded into forms so exquisite as to take its place as a material of high value and dignity in art. So rich is Lombardy in early works of terra cotta as to be fitly called by Hope the "great country of brick." Among the most ancient remains of the kind are the crypts of the church of Lenno, on the lake of Como. There sundry relics are still extant of colossal statues in terra cotta of a close-grained and tough consistency, all of which are considered to belong to the constructions of Christianity. The use of terra cotta followed the fortunes of successive schools of art in Italy. Both in sacred and secular architecture it enables us to trace the development of taste. —*Exchange.*

Arrangement of Photographs and Magazine Plates.

THE following methods of filing loose magazine plates, photographs, scraps of illustrated and loose sheets of various articles or information are adopted in several of the Philadelphia offices and elsewhere. The vertical filing system advocated by Mr. Albert Kelsey consists of deep drawers of height equal to the sheets to be filed. These sheets are filed parallel to the face of the drawer in folders which are held in place with the guide cards by a rod running through the center of the depth of the drawer.

Mr. Kelsey's system is described by him as follows:

"The filing of photographs, magazine plates and such architectural clippings as are usually kept in bulky scrapbooks, compactly together in one group, where they may be classified in a great variety of ways and indexed and cross-indexed so as to be easily found (no matter how varied the classification), is solved by the use of the Vertical Filing System, — the system so generally now in use for the filing of commercial papers in all large business concerns.

"It is true you must have cabinets with unusually wide drawers, and these are not made by all the manufacturers of modern office furniture, though there are some companies that carry them in stock, as well as the folders and guide cards with which they are equipped.

"Unfortunately, the unusual weight of the different units making up a loose leaf architectural library makes it necessary to have a somewhat stronger equipment for this purpose than that used merely for the filing of ordinary commercial papers.

"The guide cards, numbered in multiples of ten to separate this number of folders (and which, by the way, has been found by business men to be the easiest system of sub-division), must be made of heavier cardboard, and must have a tongue through which the rod at the bottom of the drawer passes, reinforced by a broad, flat ring or eyelet, since the entire strain of the flopping backwards and forwards of the loose folders when the drawers are opened and shut comes at this point.

"Another point different from the mere filing of letters is in the thickness of the matter to be filed, which fills the folders very rapidly, and if the folders are allowed to become overcrowded the system loses much of its flexibility, and the interior of the drawers then loses its neat and businesslike appearance. Therefore care should be taken in advance to separate the different classifications by a sufficiently large number of empty folders, to allow for the expansion without crowding.

"If architectural plates only are under consideration, twenty to thirty to the folder, according to the weight of the paper, is as many as should be used. On the other hand, if thin, unmounted photographs, or thick mounted photographs and miscellaneous pages from a scrapbook, are to be mixed in with magazine plates, then fifteen or twenty to the folder would be about the proper basis of calculation; but if, on the other hand, only mounted photographs, each on cards heavy enough to stand by themselves, are to be filed alone in one drawer, then the folders may be done away with entirely, and ten photographs, each consecutively numbered at the top like the ten folders between all guide cards in the other drawers, makes the simplest arrangement, though twice as many may be filed, provided they are numbered in half numbers, so that the last ones in each group will come out consecutively with the numbering of the first ones in the next group.

"The reason for giving a number to each photograph rather than one number for all of the ten, or all of the twenty, according to the group in which they go, is to make it possible to find an individual photograph by consulting the card index without having to look through every photograph in the group.

"It is done also in order that when those photographs which are in use are gathered up from the drafting tables they may be put back where they belong without it being necessary to consider the title of each subject, which would then make it necessary to consult the card index and thereby consume an unnecessary amount of time. When each one has its number, any office boy, by knowing merely how to count, can put every one back in its place without having to exercise a not always precise architectural judgment. On the other hand, it is only when a new subject is filed for the first time that it has to be given a name, and this is done once and for all by the architect himself.

"Clippings may be placed loose in large red envelopes, or may be mounted on cards, which is the safer way, but in either case the filing process is as described above. If red envelopes are used the guide cards should then be blue or gray, or some entirely different color, so that their unbroken sequence, at regular intervals the length of each drawer, shall be instantly apparent.

"The question of classifying is entirely a personal matter. It differs with the nature of a man's practice as much as with the taste of the architect.

"If, for instance, a man has a specialty, — schools or any other type of building, — he will naturally inaugurate his system by allotting groups of folders to large, small city, country, private and public schools. He may be a student also of some firm's work, — a firm that seldom has schools to do. He will then arrange a series of folders, say from ninety to one hundred, for the work of Ogee Gargoyle, subdividing it for public buildings, cottages, interiors, gardens, etc. Now let us suppose a school building by Mr. Gargoyle should appear among the plates in a current magazine which he particularly admires for its Gargoylesque detail rather than for its solution of the school's function. What does he do? Naturally he files it under Ogee Gargoyle, under public buildings, and by way of locating it individually, he makes a note of it in the card index under schools as well as on another card under its architect's name. Or, again, he may keep a large card the size of one of the plates in the first folder containing schoolhouses, on which he will record the whereabouts of other schoolhouse illustrations, or any data he may some day want to incorporate in one of his own schoolhouse designs.

"This system has been in operation in my office now for four years and has given great satisfaction. It is dust proof, elastic, compact and orderly, any boy can attend to it. I believe it to be the best method of filing a loose leaf architectural library. I use it, moreover, for

filing advertising pamphlets and for special numbers of the architectural magazines, which I consider too valuable to be torn apart; also, in another cabinet of the same kind, my office correspondence is kept. In this one go all letters, record sheets, superintendents' reports, etc., and before long all of my specifications are to be made of a smaller size, in flexible imitation leather binders, to fit these drawers.

"A last word on filing plates. We all have favorite subjects which we especially like to refer to, and most of us have a way of secreting such illustrations for future reference and for our own personal use. These accumulate in a desk drawer, on a particular shelf or in a special portfolio, or at least, it is our intention that they should. In reality, they accumulate for a month or so in one of these places, then in another, and so on until the first, second or third 'hidings' are forgotten, and the plates thus set aside for special frequent reference, if ever wanted, are given up for lost. Now all this may be obviated by using the vertical filing system, by keeping the first ten, or the first twenty, folders in front of one particular drawer especially for 'The Boss's Favorites.' I might ramble along at much greater length in an attempt to prove that the vertical filing system is the only system, but will close by assuring the reader that he can prove it for himself if he will adopt it and enforce this rule, *viz.*, that every plate, photograph, card or clipping not actually in use must be filed as soon as taken from the magazine or the package it comes in. An inquiry might be made as to the proper time to file new magazine plates, to which I reply, it is a matter for the individual to decide and is covered largely by the foregoing rule. Yes, you will say, but how about the illustrated articles you have not had time to read, and how about the half-page illustrations mixed in with the text? My reply is to keep the magazines intact for six months, and each publication in separate piles, on your library shelves, and then dismember them, make your selection and file simultaneously. By that time you will have found valuable text accompanying many an illustration which you will want to keep, and which should be clamped to the full-page plates it refers to with small paper fasteners, and all be filed under a single number. Thus anything flat, thick or thin, singly or in groups, may be stored away where it can readily be found when wanted."

In Wilson Eyre's office the magazines and other material for future classification are stacked for six months, at the end of which time Mr. Eyre personally sorts them, cutting out desirable material, which is classified under the following heading:

Country Houses, English, large and small.
City Houses, English, large and small.
Country Houses, American, large and small.
City Houses, American, large and small.

Public Buildings.	Dormers.	Iron Work.
Libraries.	Entrances	Details.
Churches.	Windows.	Own Work.
Interiors.	Stairways.	

These scraps are kept temporarily in large envelopes and later reassorted and the best taken out and put into well bound scrapbooks. The tendency of this method is to gradually eliminate, the first sorting throwing out all worthless material, the second creating a series of bound volumes containing only the best material which can go on the library shelves — and form part of the bound volume library.

In the office of Frank Miles Day & Brother much the same method is pursued, excepting that a card index is provided for each subject, and photographs of foreign work are all mounted on the same size card and filed away. These are generally indexed by the card system as to subject and name of building.

In Messrs. Day's office the scrapbooks are still maintained, but in addition to these are cases of shallow drawers, which hold large envelopes the size of the architectural plates, in which the different subjects are filed away. These envelopes have some advantage over the scrapbook, inasmuch as the individual scraps can be reassorted at any time, and in studying at the drafting table, two or three or more sheets of scraps are not in the way, as is often the case with a bulky scrapbook On the other hand, there is danger of loss of plates, or of putting back plates in wrong places by the carelessness of draughtsmen.

For "own work," the scrapbook is advantageous, as it is always ready for the inspection of a client.

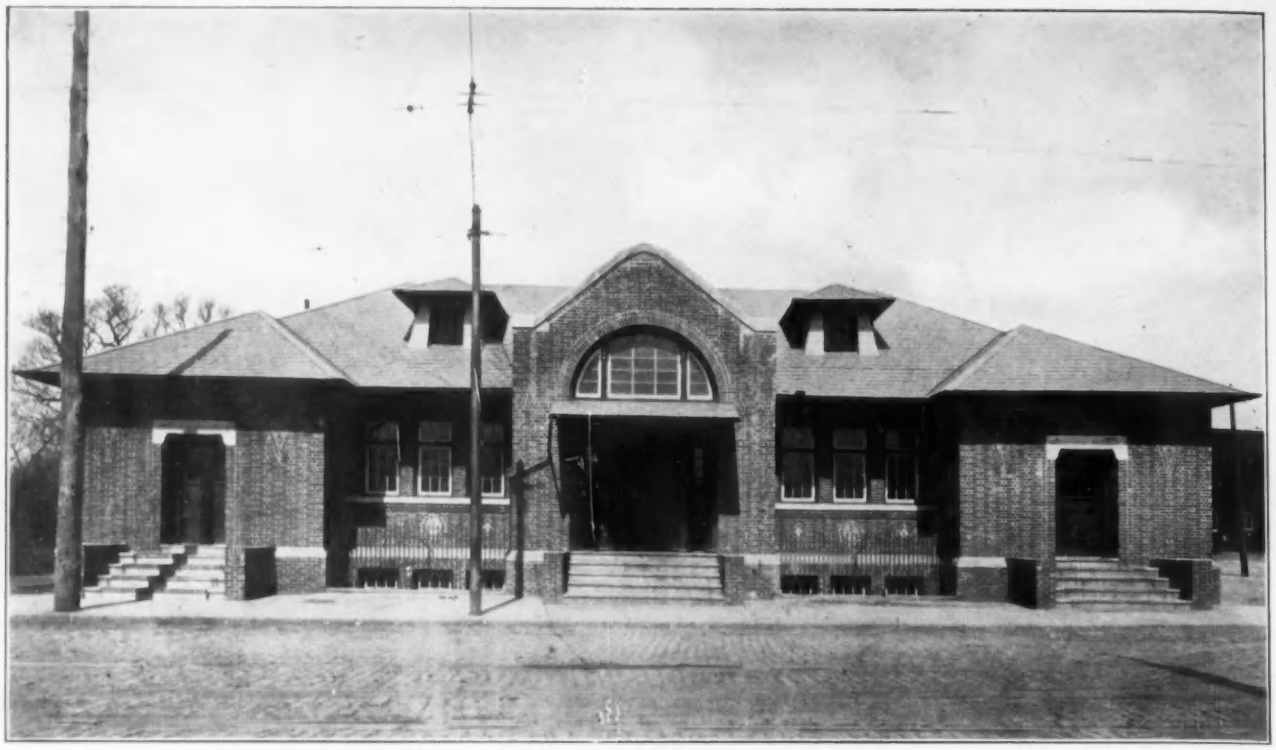
In the office of Cope & Stewardson the scrapbook system has been abandoned for the envelope system with card index. Even with this, the material accumulates faster than it seems possible to dispose of it.

It is necessary for the designer to personally select the good and cull the bad, and this is left until he is not otherwise busy. It is perhaps best to put material aside for a month after it is received, then to sort it, again to put it aside for a few weeks and resort, saving only the best. There is so much worthless material extant that it will be found advisable to throw away duplicates and the larger part of the remainder. The discarded material may be turned over to the draughtsmen, for them to form nucleus of personal individual libraries.

The magazine plate is taking the place of the photograph, and these plates are not only very much cheaper, costing not one-twentieth of the silver print, but they are on good paper which does not curl, and the material can be packed away in a much more compact form.

The tendency of the envelope and vertical file systems is to create a working library of loose plates, easily replaced, substituted, added to, or deducted from, which is largely for the use of the draughting table, and in which the loss of individual units, or general wear and tear can be readily made good. This library does not get to become a part of the bound volume library, and is the natural outcome of the ease and economy of collecting examples which results from the use of reproductions by processes, rather than of photographs and valuable lithographs, engravings and mezzotints, which have intrinsic value in themselves apart from what they represent, and, which naturally create the bound volume library.

It is a good idea for an architect who has much material published to keep a book, and in it note the magazine and time in which each piece of his work was published. Then when he wants to send a copy of any particular subject to a client, he can write for additional copies of the magazine, or if these are exhausted, have photographs made from the original negatives.



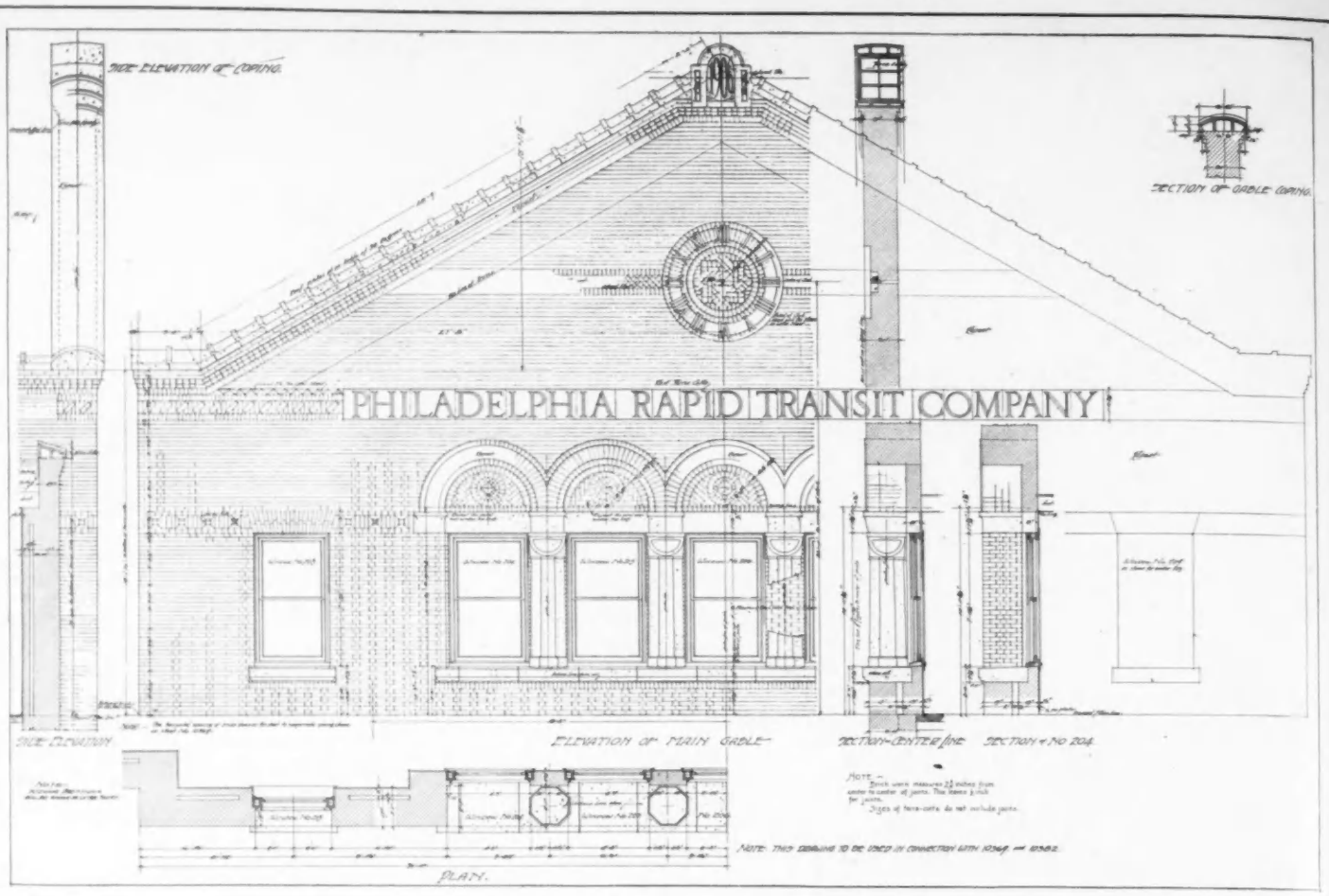
FRANKFORD AVENUE STATION, PHILADELPHIA RAPID TRANSIT CO.

SUBSTATION, MARKET AND ALLISON STREETS, PHILADELPHIA RAPID TRANSIT CO.
R. C. HEATH, ARCHITECT.

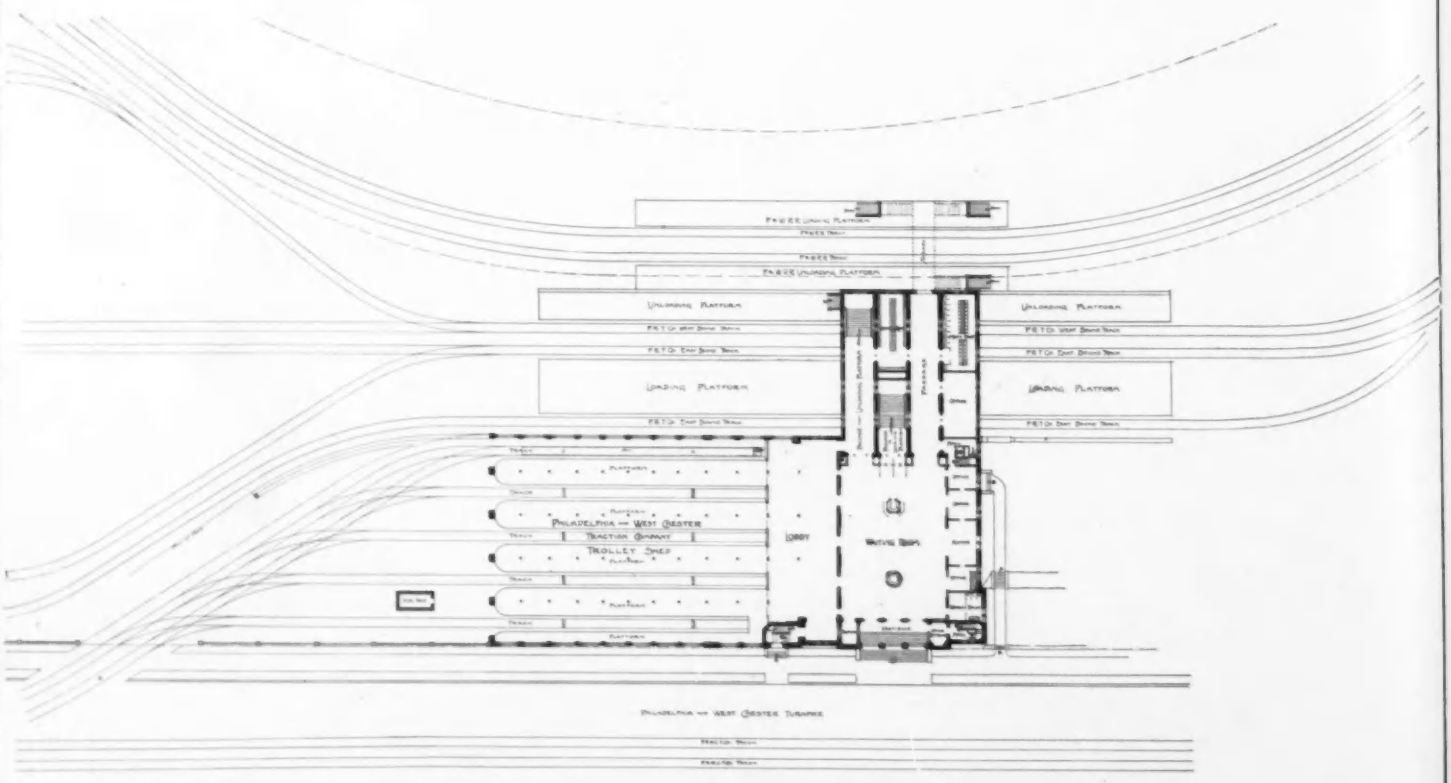
SUBSTATION, WOODLAND AVENUE AND 58TH STREET, PHILADELPHIA RAPID TRANSIT CO.

SUBSTATION, LANCASTER AVENUE AND 52D STREET, PHILADELPHIA RAPID TRANSIT CO.

R. C. HEATH, ARCHITECT.

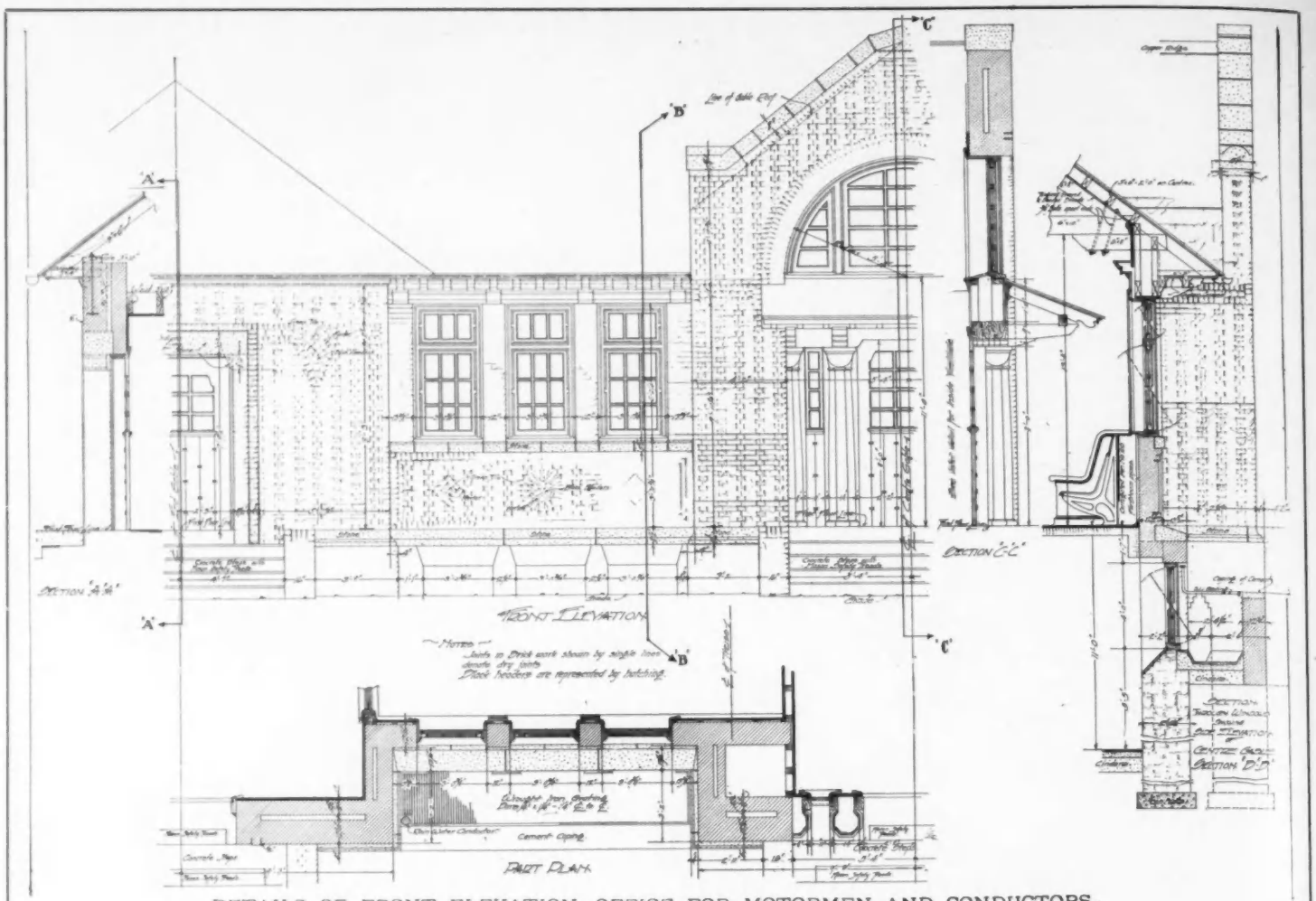


DETAIL OF MAIN GABLE, MARKET STREET TERMINAL STATION.

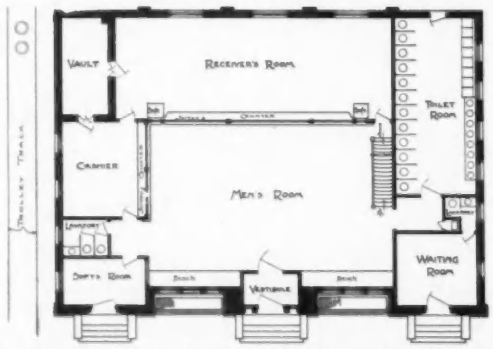


PLAN, MARKET STREET TERMINAL STATION, PHILADELPHIA RAPID TRANSIT CO.

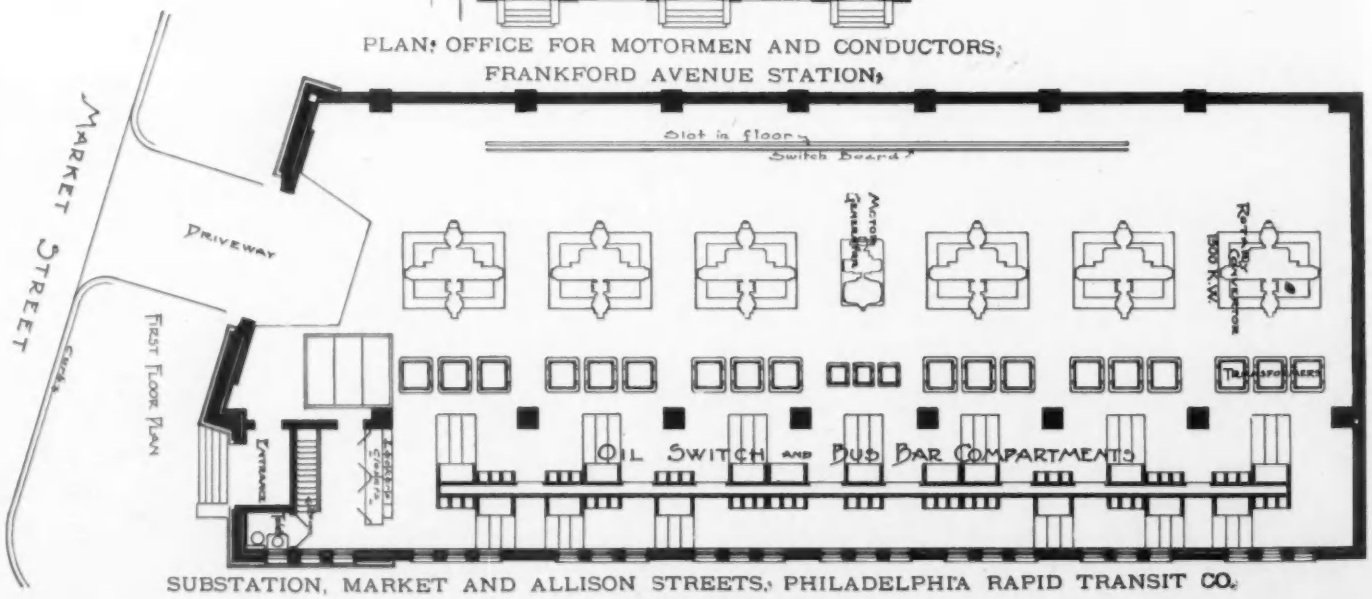
R. C. HEATH, ARCHITECT.



DETAILS OF FRONT ELEVATION, OFFICE FOR MOTORMEN AND CONDUCTORS.



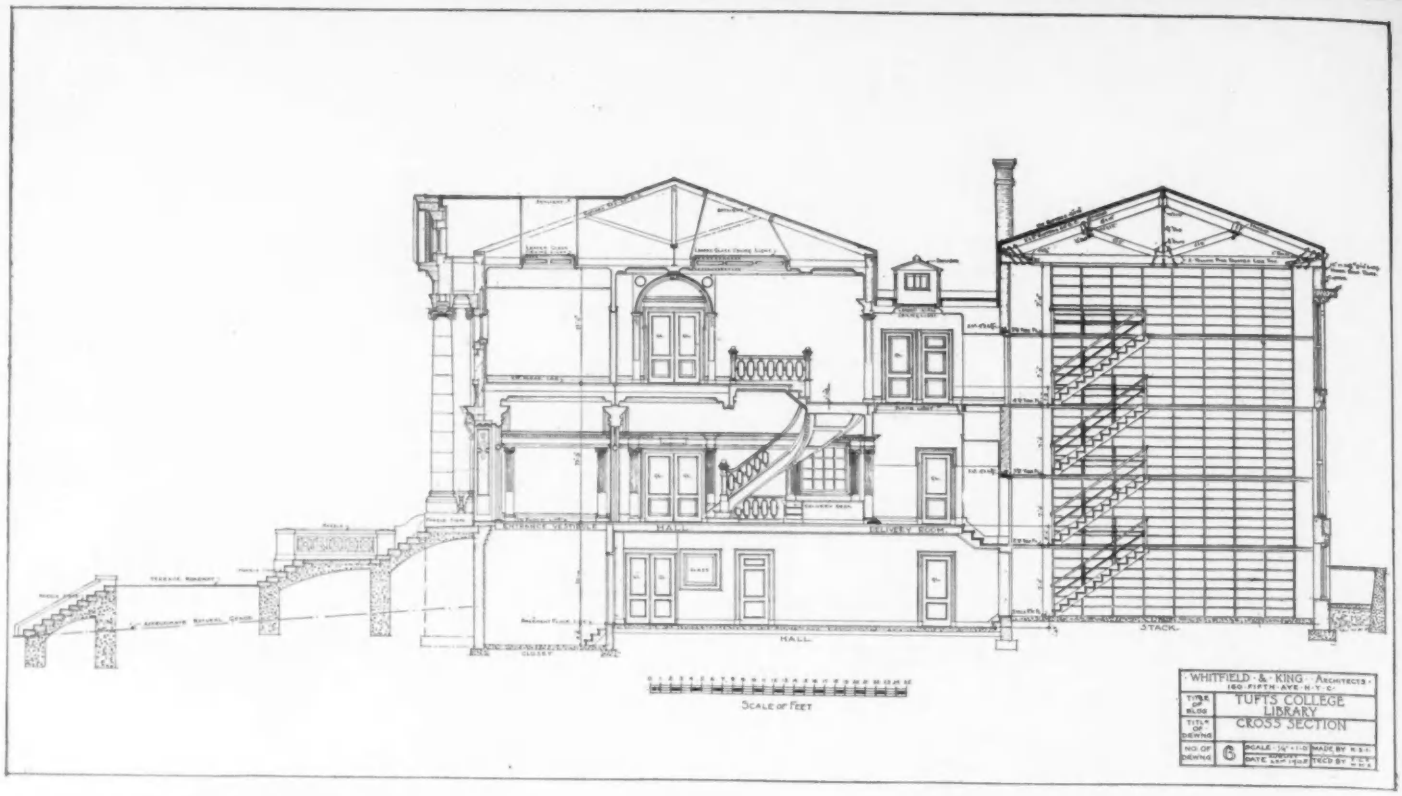
PLAN; OFFICE FOR MOTORMEN AND CONDUCTORS;
FRANKFORD AVENUE STATION;



SUBSTATION, MARKET AND ALLISON STREETS, PHILADELPHIA RAPID TRANSIT CO.
R. C. HEATH, ARCHITECT.

TUFTS COLLEGE LIBRARY, MEDFORD, MASS.

WHITFIELD & KING, ARCHITECTS.



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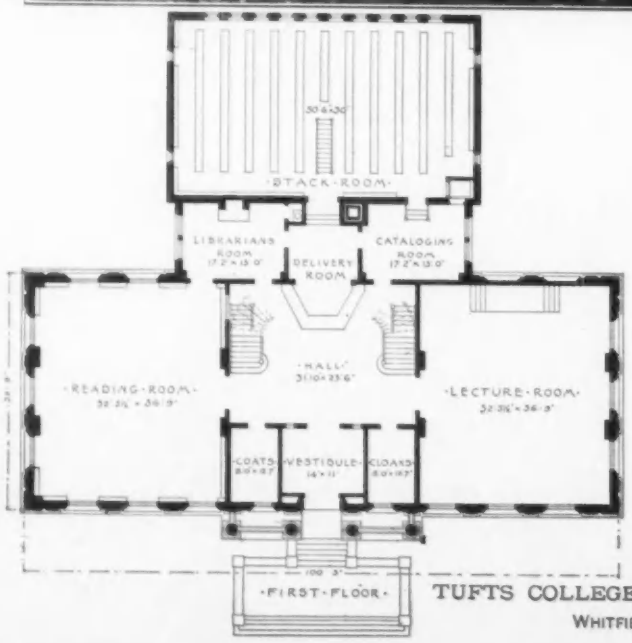
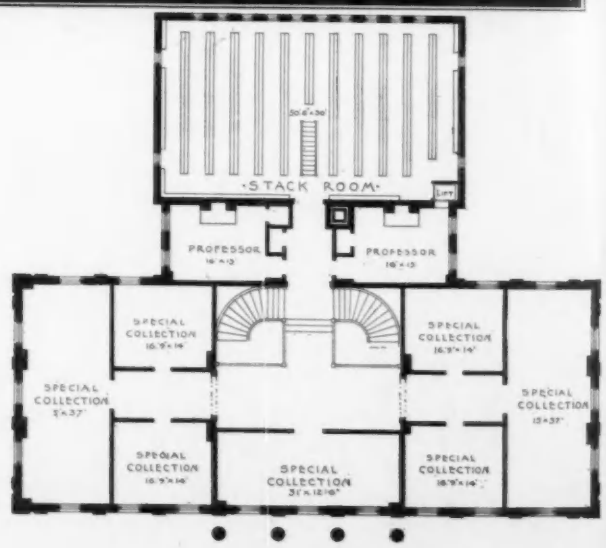
WHITFIELD & KING, ARCHITECTS.





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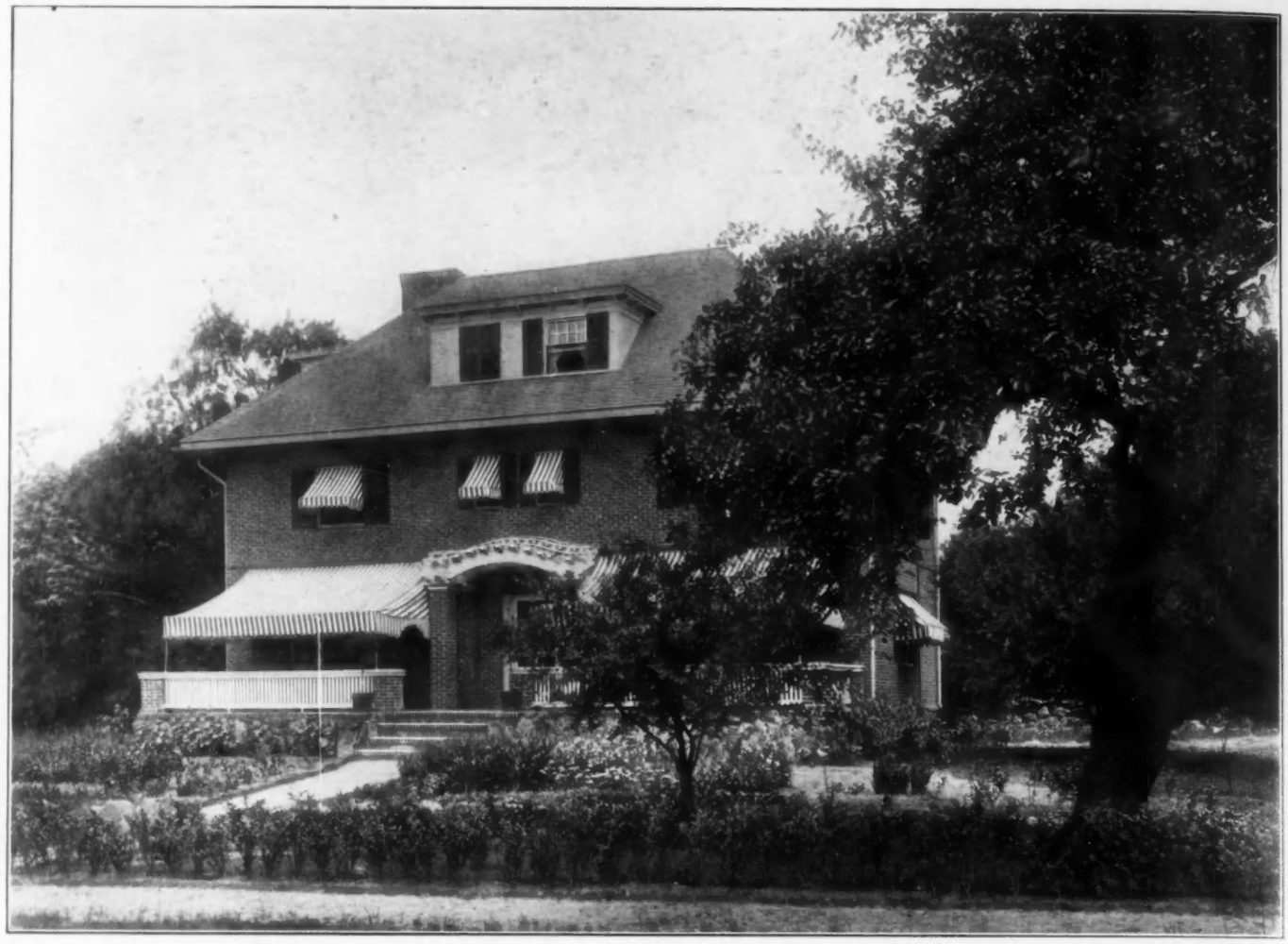
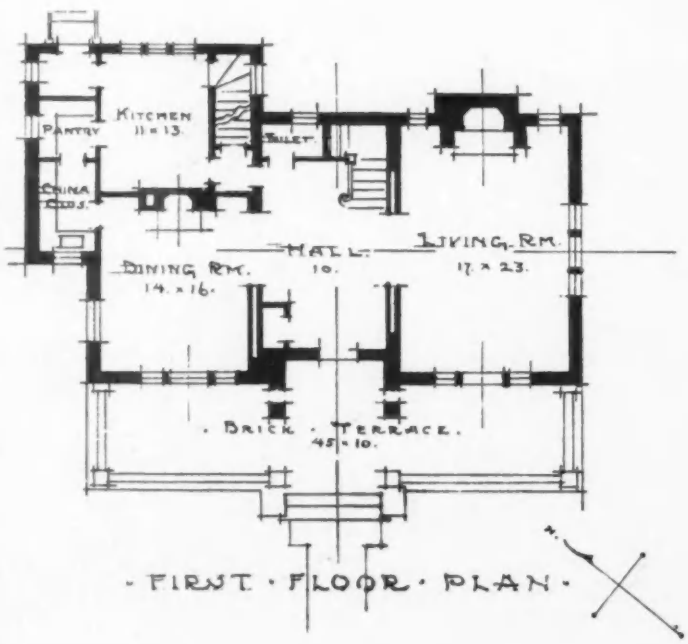
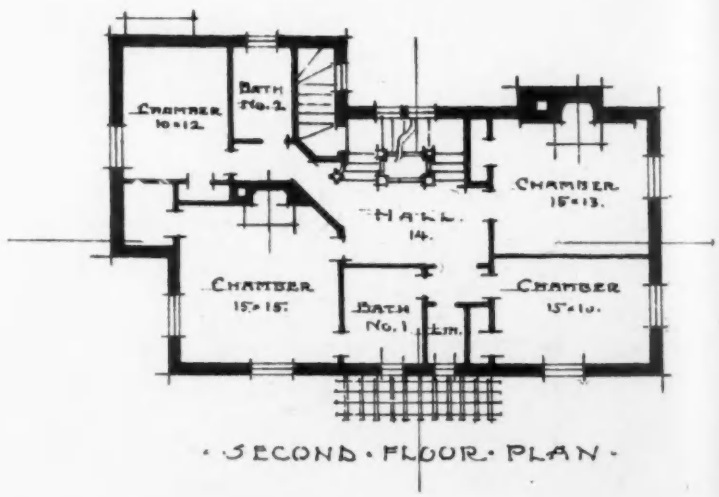
WHITFIELD & KING, ARCHITECTS.





· FIRST · FLOOR · PLAN ·



· SECOND · FLOOR · PLAN ·

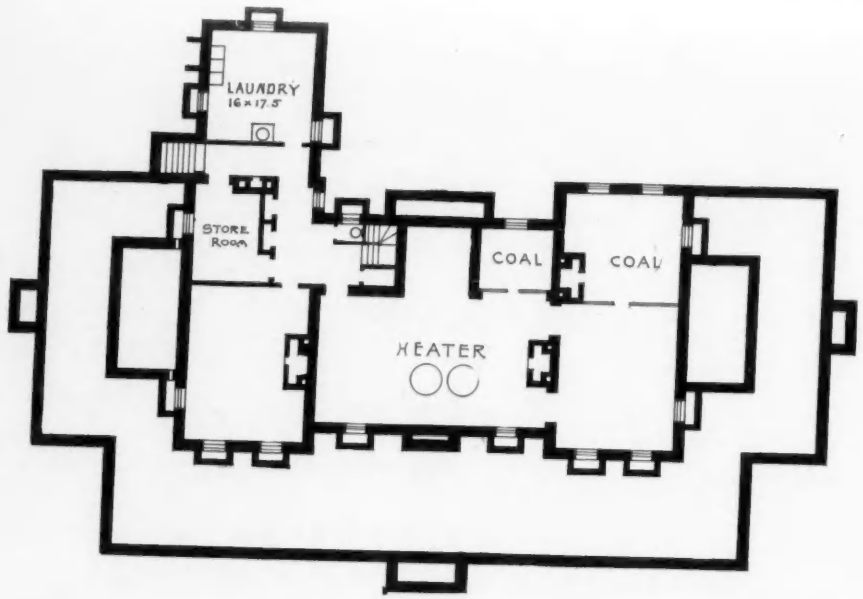
HOUSE AT CHESTNUT HILL, MASS.

J. LOVELL LITTLE, JR., ARCHITECT.

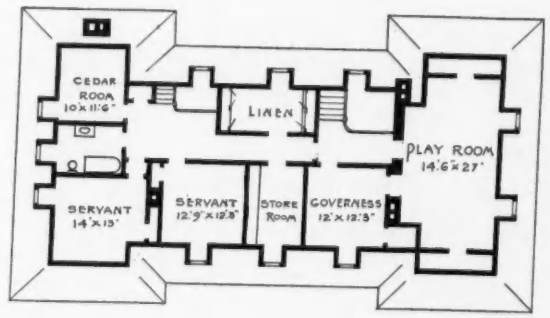
HOUSE AT CHESTNUT HILL, MASS.

J. LOVELL LITTLE, JR., ARCHITECT.

HOUSE AT CHESTNUT HILL, PA.
HORACE TRUMBAUER, ARCHITECT.

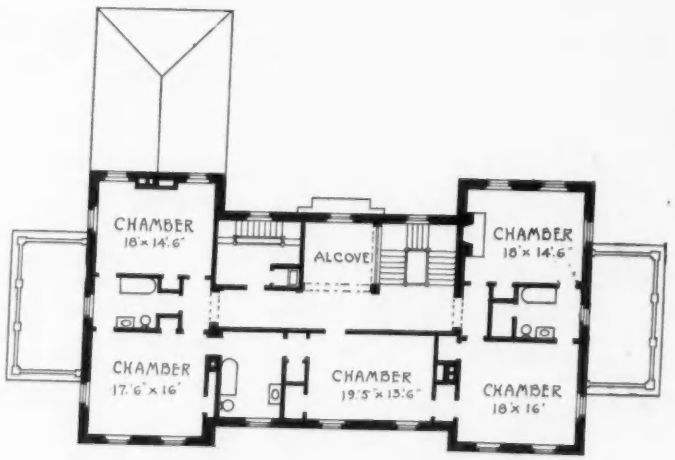


·BASEMENT·



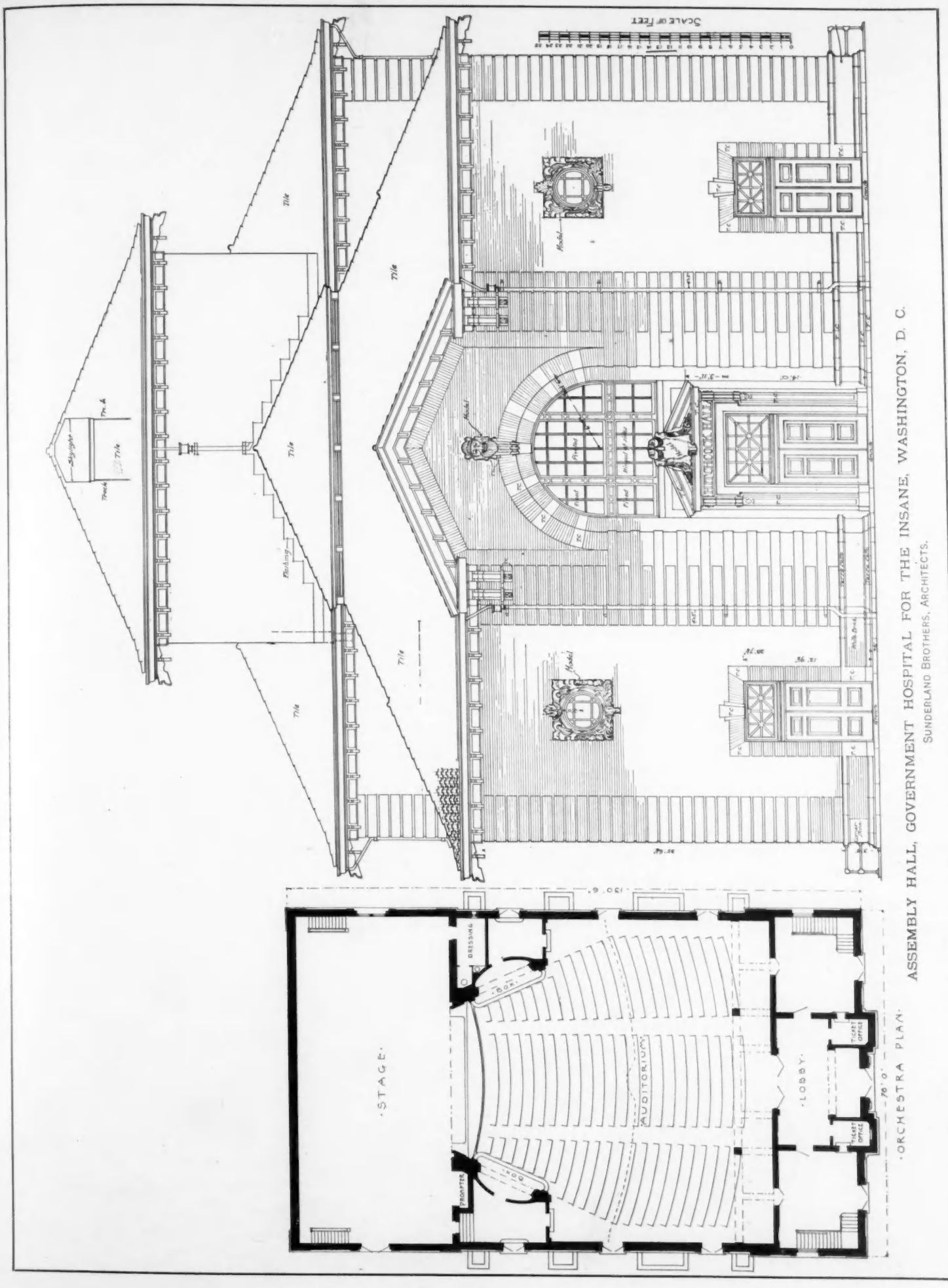
·THIRD FLOOR·

·FIRST FLOOR·



·SECOND FLOOR·

PLANS, HOUSE AT CHESTNUT HILL, PA.
HORACE TRUMBAUER, ARCHITECT.


Scale of Feet
Tile
Skylights
Roofing
Model
TC
Asphalt
Asphalt & Tile
Tile & Gravel
Tile & Slate
Tin
Slate
Copper
Iron
Wood
Stone
Glass
Brick
Concrete
Plaster
Marble
Terra Cotta
Mosaic
Tiling
Metal
Wire Glass
Ornamental Glass
Ornamental Metal
Ornamental Plaster
Ornamental Stone
Ornamental Terra Cotta
Ornamental Wood
Ornamental Tile
Ornamental Mosaic
Ornamental Tiling
Ornamental Wire Glass
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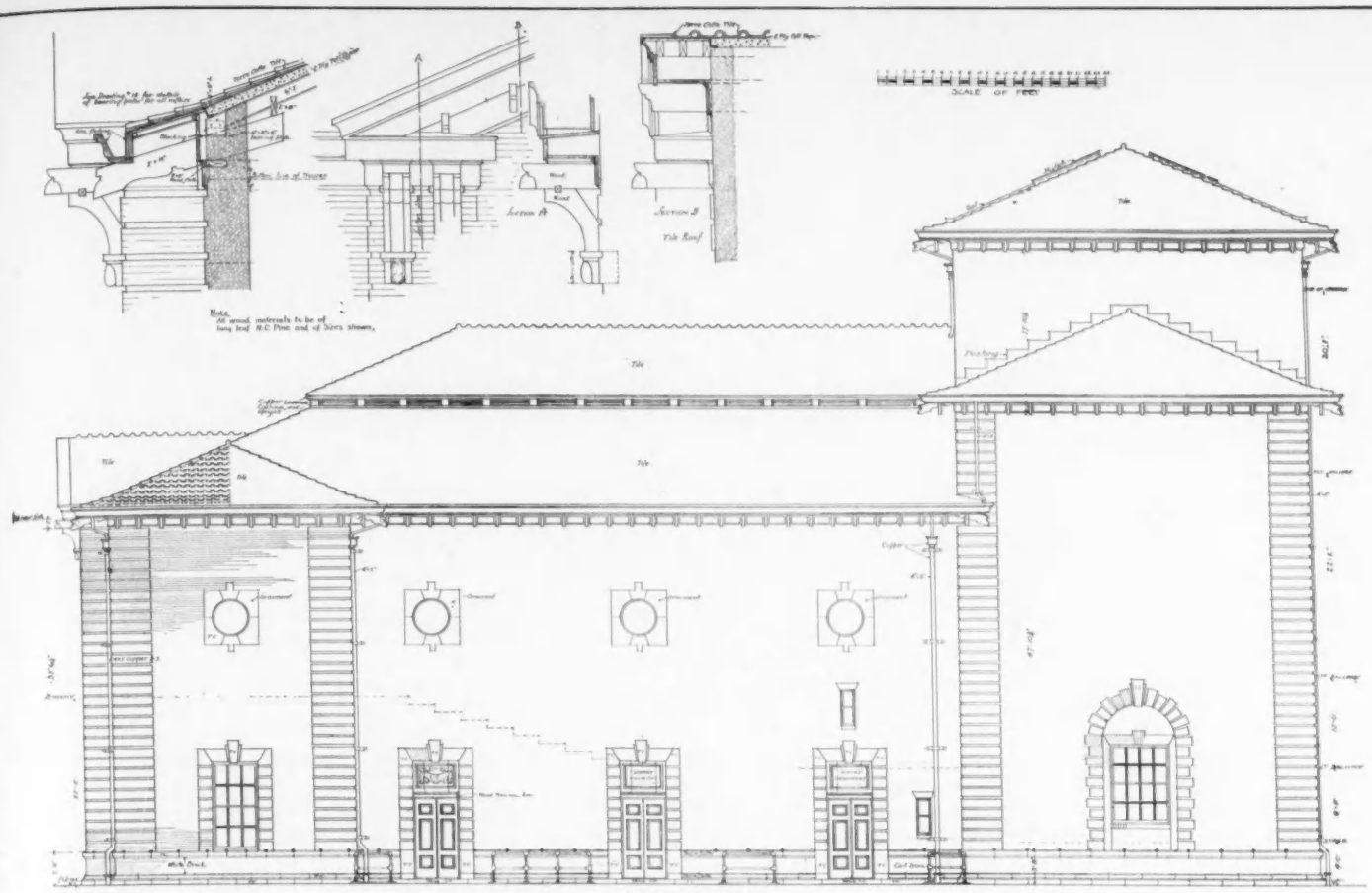
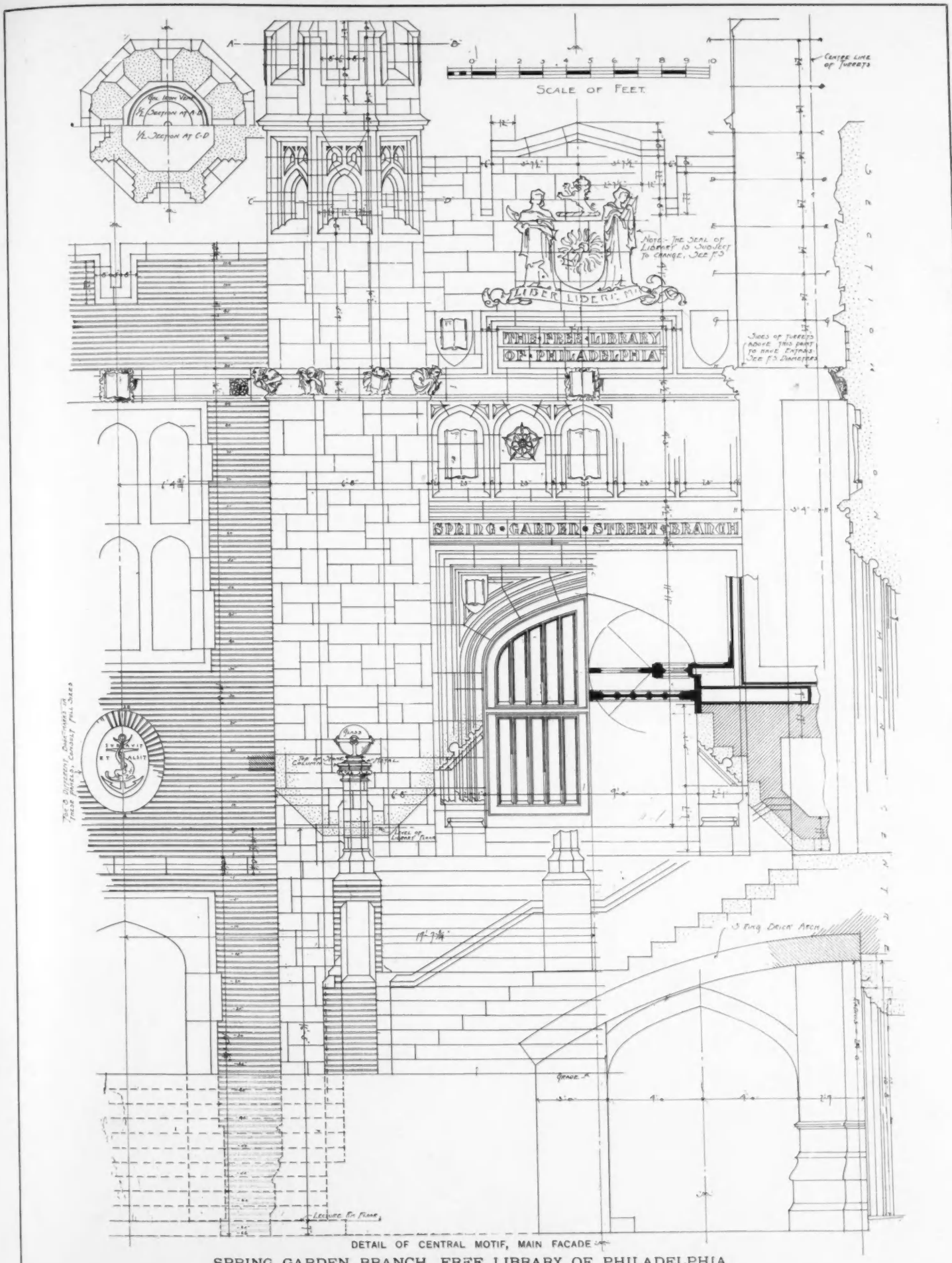
Ornamental Tin
Ornamental Zinc
Ornamental Brick
Ornamental Concrete
Ornamental Marble


SCALE OF FEET
Section A
Section B
Tile Roof
Note.
All wood materials to be of long leaf N.C. Pine and of sizes shown.
Tile
Tile
Tile

FRONT VIEW.

SPRING GARDEN BRANCH, FREE LIBRARY OF PHILADELPHIA

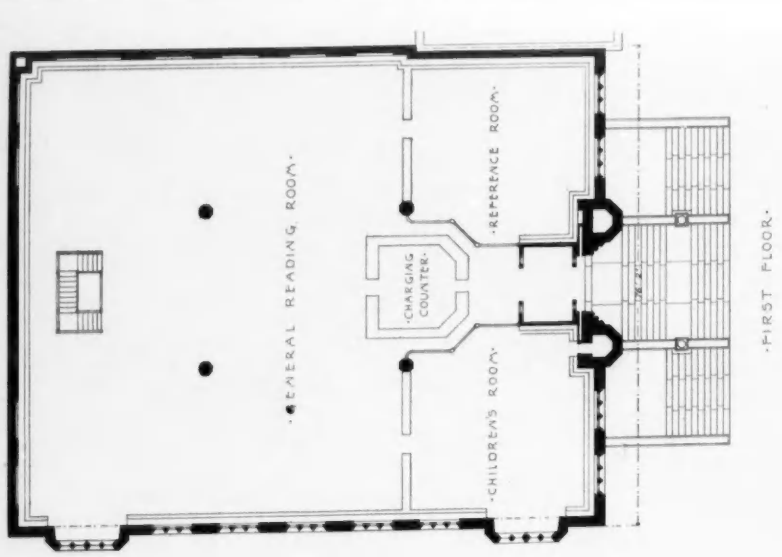
FIELD & MEDARY, ARCHITECTS.

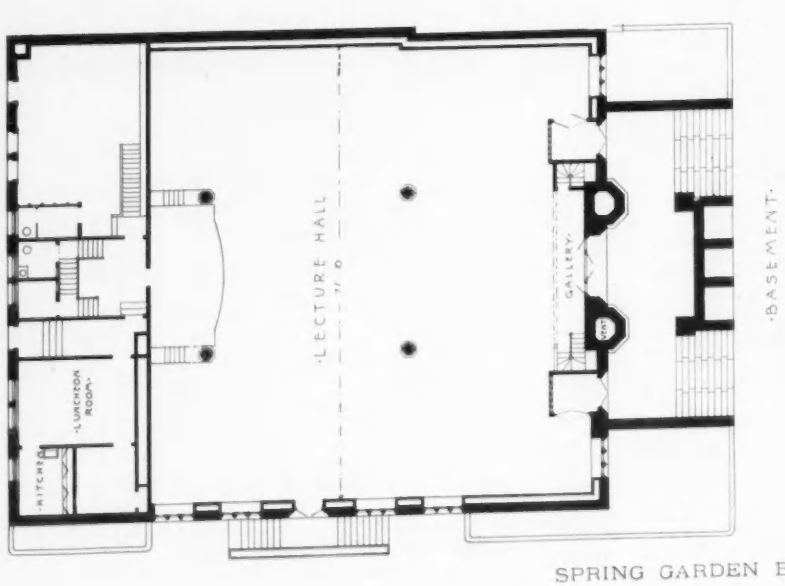


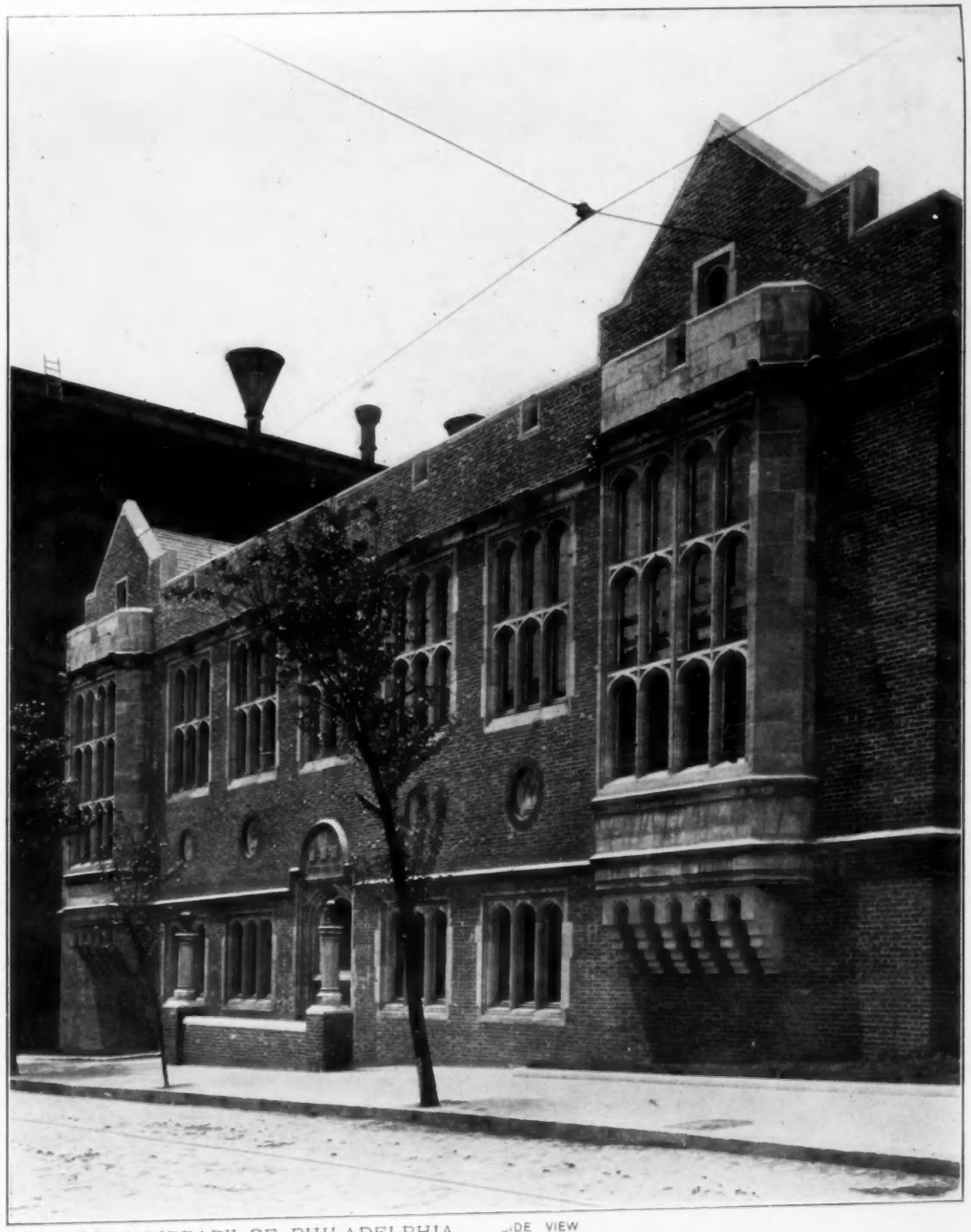
DETAIL OF CENTRAL MOTIF, MAIN FACADE.

SPRING GARDEN BRANCH, FREE LIBRARY OF PHILADELPHIA

FIELD & MEDARY, ARCHITECTS.







SPRING GARDEN BRANCH, FREE LIBRARY OF PHILADELPHIA. SIDE VIEW

FIELD & MEDARY, ARCHITECTS

In the office of Heins & LaFarge, New York, the photographs, which number some thousands, are mounted on muslin, and are in cloth covered pasteboard box drawers with locker fronts and lifting tops. These drawers are placed in pigeon holes, each of which holds four drawers, one over the other. On the front of each is a metal frame holding a removable card on which is indexed the contents of the drawer. The photographs have numbers on the back corresponding to the number of the drawer. The classification is chronological and also by style and subject. The obvious possibility of loss of individual photographs seems to be overcome by the large size and individual character of the mounts.

This system is quite as adaptable to plates as to photographs, and presents but one objection to a mass of various material, *i. e.*, there is not as good an opportunity for the insertion of guide cards as in the vertical system, and the card on the face of each drawer is obviously too small to contain all the information and subdivisions of the material within the drawer.

In the office of Smith, Wetherell & Gage, Des Moines, Iowa, there is used a variation of the vertical filing system, in that two drawers (or separate sets of drawers) are used, one for classes of buildings, the other for styles, the groups in each being separated by heavy board guide cards. In one drawer is the classification for types, *i. e.*, Art Museums, Banks, Clubhouse, Depots, Elevators, Residences, etc. In the other, classification is for style, and any building in a distinct style is placed in this drawer. Each plate is marked with a rubber stamp, giving owner, date, class, architect, style and number. Indexing is by card catalogue with cross reference to class and style, and the cards give careful description of the plates.

The card index can be prepared so as to give the entire classification of any particular plate if so desired, so that it can be minutely described, giving the "style" or "class," as the case may be, name of architect, etc., and also stating if good, or indifferent, good detail, good for windows, cornice, proportions, entrance, etc.

The date and number blank of the stamp is rarely used, as it involves unnecessary labor in labeling the plates.

This system can be easily adjusted to any architect's individual taste in the classification of the plates, and the use of the rubber stamp enables one to so label the plates as to easily replace them in the proper compartment. At the same time one can easily find plates representing a certain class of building desired. The system seems to be merely a simplified form of the vertical filing system advocated by Mr. Kelsey.

There is a system used in libraries for photographs which could be adapted to architects' use. It is that of a closed cabinet of sufficient depth to receive plates on edge, on the back of which are hinged clips to receive mounts vertically which can then be opened like the pages of a book. Such a system, however, should not be used for scraps, unless they are pasted on mounts.

MEDLÆVAL CASTLE AT SERMIONE, LAKE GARDA, ITALY.

Ceramic Tiles and their Use.

BY C. HOWARD WALKER.

A VERY excellent method of obtaining variety, both in floors and in walls, is that of dividing surfaces into panels with borders and treating the enclosed fields with different allover patterns, and while this method has been repeatedly adopted with marbles and with glazed tile it has seldom been adopted with unglazed tile of one or two tones or colors. Floors of tile, like mosaics, should be formed of separated areas in order to avoid long cracks or opening of joints across the field, and, in fact, to give opportunity for adjustment of the surface at the boundaries of the areas, and the method of segregating certain definite portions, large or small, by individual minor borders is one well worth consideration. The mosaic floors of tesseræ of Rome, of the Byzantine period and of the Renaissance were divided by marble strips or borders into areas every ten or fifteen feet. Another development of the same idea is to be found in the Cosmati work in Rome and elsewhere, in which these secondary borders around portions of the field become of very considerable importance and have each its own design. The marble mosaic floors in San Marco in Venice are an admirable example of subdivision which could be adapted to tile, as are also the floors of St. Lorenzo and of St. Maria in Cosmedin in Rome. In many cases the pattern of these floors, and similar patterns which occur upon the walls, are based upon circles as well as upon polygons. It is naturally difficult to obtain tiles with curved outlines, but if the unnecessary attention to closeness of joints is waived, short and narrow oblong tiles can be placed upon large circles and create approximately circular forms, which will, however, be necessarily of large scale. The areas around which these borders are carried may vary in the designs of their fields, but as the borders are the important feature of the general design the patterns of the fields should be very simple. There is little to be gained by strong contrasts of color in tile patterns, the units being so large in scale that they do not blend in effect, and remain spotty even at a very considerable distance. The exception to this general statement is to be found in the borders made up of parallel lines of narrow long tiles, in which case, as the effect is that of lines and not of spots, strong contrasts are admissible and often advisable. The joints actually indicate the pattern and should be definite, forming a network of lines over the field or border. This may be obtained either by increased size of the joint, or by setting the tiles in dark cement, or by both. The effect is much superior to that produced by contrasts of adjacent tiles of different colors. In carrying straight tiles around curved forms and in making patterns in which the sides of adjacent tiles do not exactly coincide, the spaces left may be arranged to increase the effect of the pattern and be filled with cement. An infinite number of decorative designs can be made from geometric tiles in this way; in fact, almost any archaic or simple design in any style may be adapted to tile, when it is recognized that it is not the surfaces of the tiles which are their principle feature but the patterns in which they are laid, as indicated by the joint. In floors the introduction of terra cotta or of faience, with the tiles as borders or as centers, gives further opportunity for interesting treatment, and corresponds with the borders of marble and the centers of porphyry associated with the marble floor mosaics of the Christian basilicas in Rome. Modelled tiles are as ineffective if uncontrasted with large surfaces of plain tile as is any ornament which has no adjacent contrasts, and such tiles are best used, if at all, as occasional foci. Exterior tile patterns, placed at some distance from the point of view, require stronger contrasts and larger joints, and can successfully be treated in relief and in different planes. This is so obvious that further consideration of it is unnecessary.

From the mere natural geometric shapes of tiles, in squares, triangles and other regular polygons, the patterns tend toward geometric ornament if the tiles are fitted together, but there is a large field for experiment by using the tile units as elements of a mosaic and forming designs with them, the interstices of which will be filled with small rectangular or triangular tile. Very little of this type of work has been done, and its possibilities are infinite. The tile shapes would consist of a series of long rectangles of various widths from which to build up borders and stems, a few sections of circular rings with which to build up larger curves and to turn corners, and a simple series of leaf shapes, cordate, lanceolate and oblate. An infinite variety of patterns derived from natural forms can be assembled from very few factors, and to the persistent recurrence of geometric tile patterns would be added a wealth of contrasting designs. It is probable that these designs would be better fitted to exterior work than to interiors, as they would be, by the size of the units, at a disadvantage compared to marble or glass mosaic near the eye, and correspondingly effective at a distance. The experiment has been tried in Sweden and in Germany, but only with partial success, as the patterns were displayed in strong contrasts of color and tone with the ground, while as a matter of fact, the difference in size of the pieces and in the texture of the joints is nearly sufficiently adequate to define the design, and but slight contrasts of color or tone are necessary. Modelled forms are not advisable in this work, but a series of tile with concave surfaces would be extremely effective. It is a matter for regret that there are next to no concave tiles to be obtained, though there are a number of convex ones used. A convex tile exerts an apparent strain on the tile surface, and seems too heavy and thick for the surrounding tiles, but the concave tile affords delightful opportunities for delicate light and shade. There was to be found, at one time, a number of tiles with the impression of delicate ferns and foliage either expressed or raised upon their surface. These are ineffective in mass, require close examination, and though occasionally charming as unique pieces, are incapable of association with more rigorous forms. If stamped patterns are to occur on unglazed tiles their purpose is merely to reduce the scale of general texture, and the more nearly they approach the scheme of simple geometric repeat the more successful is the result. In no case should the joint of tile work be accentuated by the modelling on the tiles, whether by a depression or a dike, for in placing the tiles together the effect is doubled, and the tiles become isolated units, no longer factors of a general surface. If, therefore, depressions or dikes are made upon a tile they

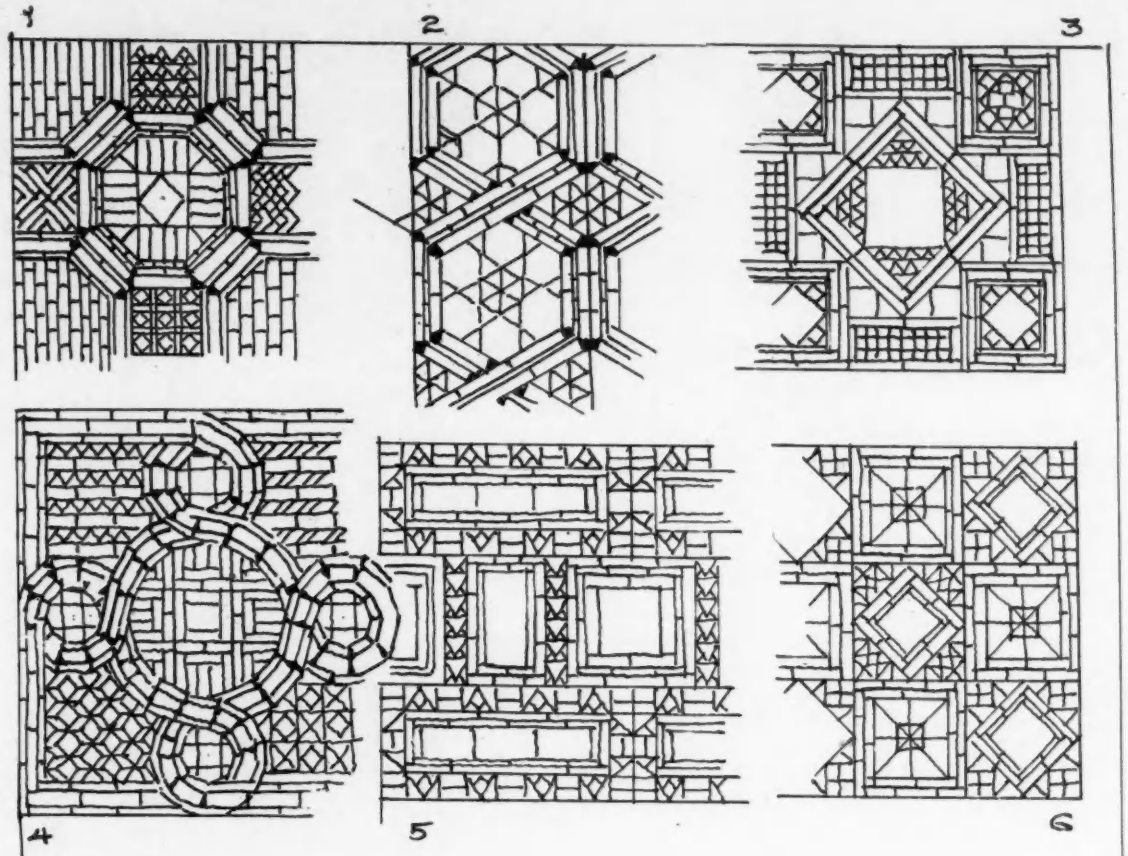
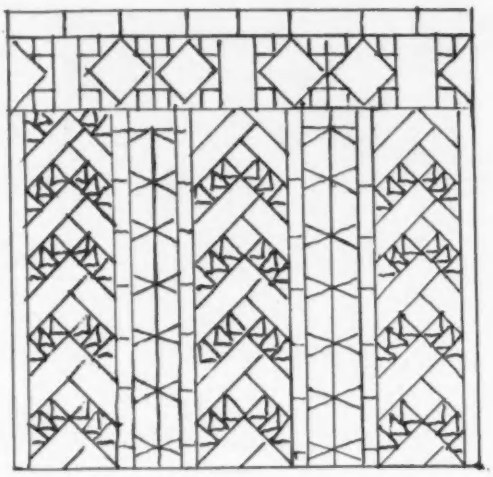


PLATE III. FLOORS AND WALLS.



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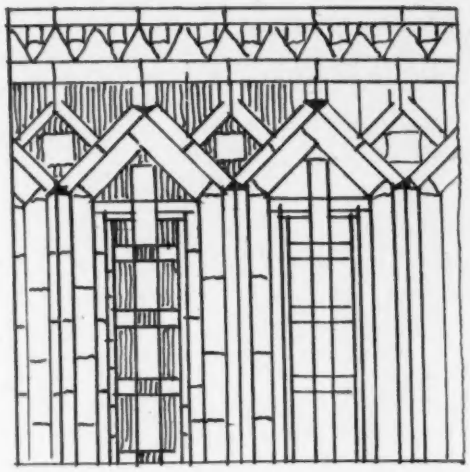

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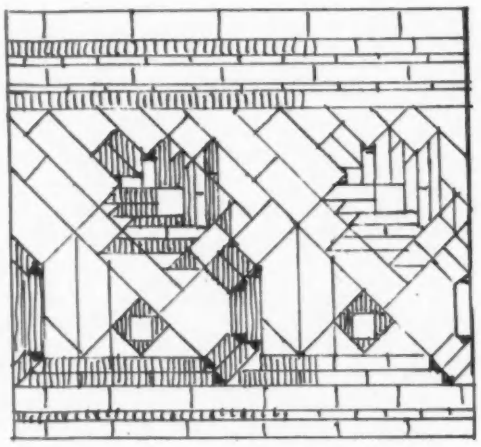

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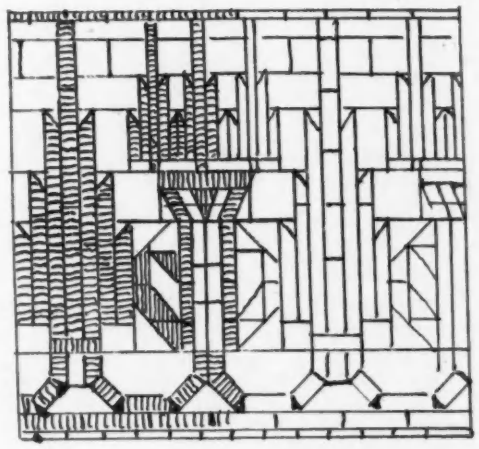

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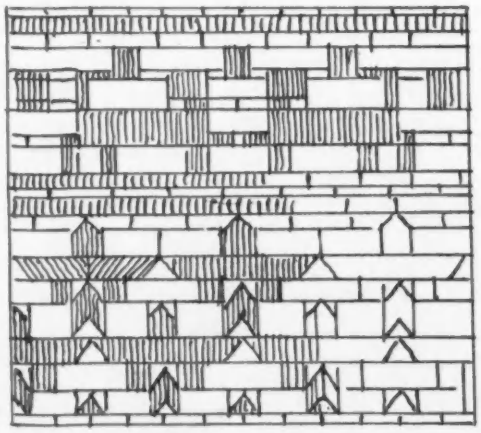

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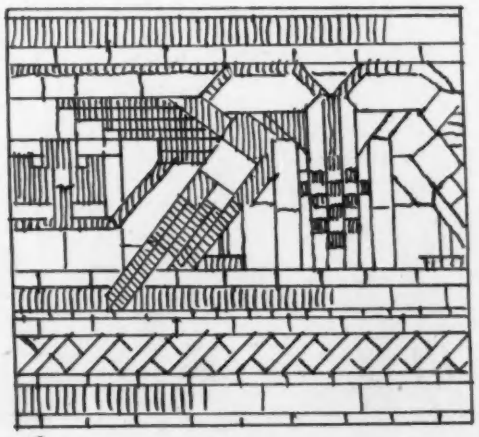

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PLATE IV.

should run across the joints, and thereby serve as motives which unite the tiles and do not separate them. This is in accordance with the desire to treat tiles as correlated factors of a surface. The few fundamental facts in regard to unglazed tiles, before glazes and color and paintings are considered, are these:

First, that with the exception of individual unique specimens, tiles are units for the purpose of veneering, of covering a surface with a comparatively thin covering, and they should frankly acknowledge that purpose, and should therefore submerge the identity of the unit in the general effect of the whole; should unite the units by a general plan of combination, by surface design, if such exists, that passes from one tile to the next by avoidance of any modelling or projection that appears too heavy for the thickness of the tile covering, and especially by a careful consideration of the scale of the subdivision of the surface, whether by joint pattern or by surface pattern in relation to the character and position of the wall, realizing that in interiors, tile wall surfaces have a coarser texture than any other used.

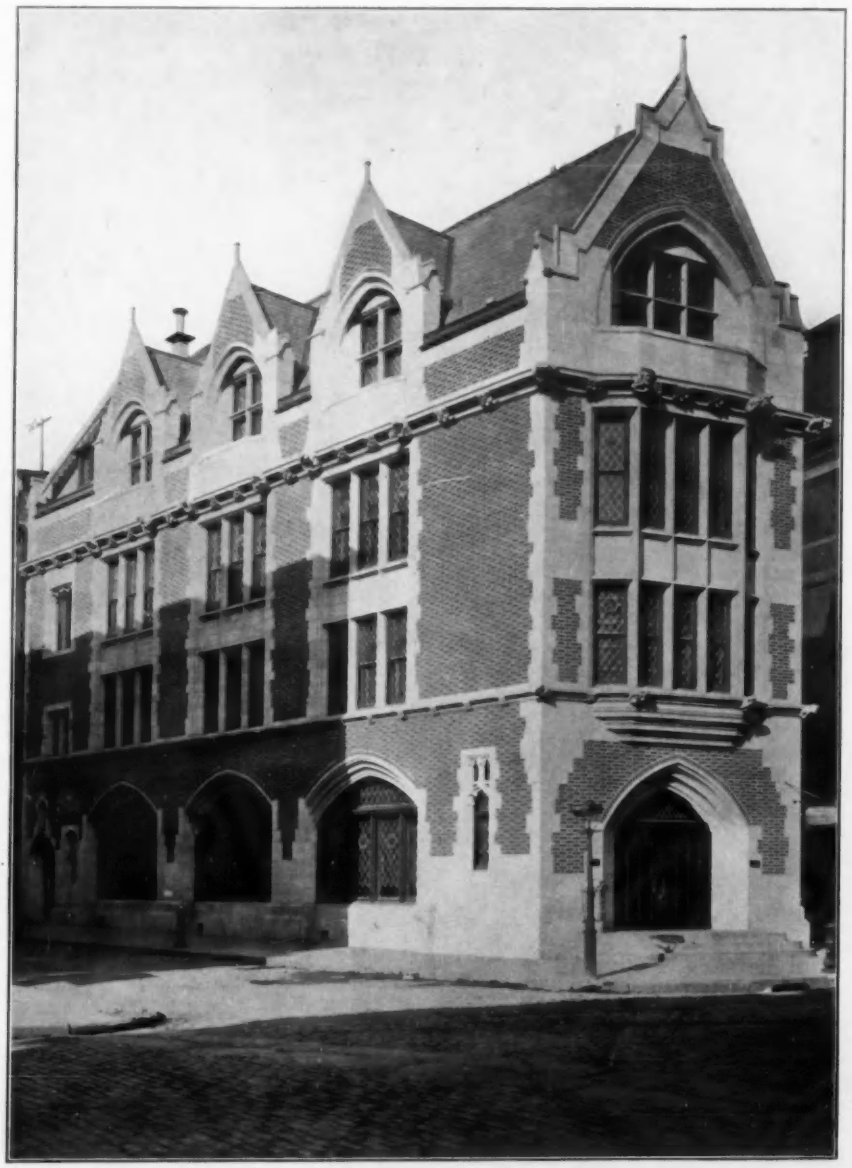
In considering glazed tiles without painted pattern, all the remarks relating to unglazed apply equally well, and the elements of quality of glaze, reflecting power of surface, and of color require additional comment. Broadly speaking, glazed tiles can be divided into those with dead glazes and with lustrous glazes. In the former case brilliancy of color is sacrificed for general effect of surface; in the latter, general effect for brilliancy of color. A lustrous glaze has the same effect upon the color of the tile that varnishing has upon the colors of a picture; it gives depth to the dark tones and brilliancy to the middle and light tones, and to all color, but it has also the disadvantage of any polished surface, *i. e.*, it reflects everything else in the room and thereby loses solidity and at times disturbs the contemplation of any object placed near it. Large surfaces of lustrous tiles make an instantaneous impression. All sorts of accidental high lights become evident on them and they have a peculiar capacity for reflecting high lights to an indefinite extent. For this reason it is well to use lustrous tiles either in small quantities, as in mantel facings, or as foci, or as expressing an extent of superlative cleanliness, or on rooms which are comparatively without furniture. Lustrous tiles in bathrooms, toilet and kitchens are excellent. Assuming that for most wall surfaces tiles with dead glaze are the most desirable, the color quality of the glaze is greatly influenced by the body of the tile, the lighter colored body better adapted to light and bright tile, while a deep red body gives depth and richness. The tiles should have each a uniform glaze, any attempt at variation of glaze in a single tile being an affectation which is apt to result disastrously for the general effect. Variation of wall color surface can and should be gained by the use of tiles of varying tones and colors. In this respect it is interesting to note the development of tile designs in Spain. The Mohammedan tile surfaces in the Alhambra are tile Mosaics built up of tiles of different shapes and colors separated from each other by small borders of white ribbon tiles. Many of the designs are based on the so-called Solomon's star pattern, but in every case each tile has its integral color. The separating ribbon tiles are always white, and the star patterns are built up with a center cut to a six or eight pointed star, and the development is produced by the use of long tiles with end miters and double miters. There are naturally, in addition to this, the usual regular polygons, triangles, hexagons, octagons and, in a few rare cases, pentagons. The patterns are identical with the marquetry patterns in the doors and the bronze patterns in the Mosque doors in Constantinople and elsewhere. With these simple factors are built up over forty designs, which are amongst the most effective wall surface designs in existence. The colors are few — a dull Indian yellow, a green of various degrees of depth, a dull half-toned blue and a deep purplish maroon at times becoming black. The tiles are small, not over four inches in their largest dimension, and often one-half an inch in the smallest, and are fitted carefully. After the fall of Granada, in 1492, these patterns were stamped by the Spanish tile makers on square tiles, the colors being painted into the forms, but as these colors ran over the intervening ribbon forms, despite the fact that the edges of these were raised, the clean-cut effect of the Moorish mosaic wall surface became bleared, and later, under Pedro the Cruel, another type of square embossed tile, introducing Gothic detail, and with circular forms, took the place of the earlier tile. These became the famous Spanish Azulejos with which the walls of the Casa de Pilatos at Seville are covered. With all their splendor, with the addition of lustrous metallic glazes and irridescence, these tiles lack the refinement of the Moorish mosaic tile. The factors of the Moorish combinations by no means exhausted the possibilities of mosaic tile designs.

The Moorish tiles were, in most cases, devoid of parts of circles and of ellipses; they had few curved forms and no shapes based on leaf forms. There is still, therefore, the possibility of a series of most effective tile mosaics, for both interior and exterior work, designed from combinations of tiles of various shapes.

Plates III and IV indicate a few of the numberless possibilities of tile design, using only the factors already existent of straight line geometric units.

Plate III, Nos. 1 to 6, are floor designs of areas divided by borders. Any of the borders already shown in Plate I and the fields in Plate II can be used in designs of this character. No. 4 shows curved borders made of small straight tile. No. 5 has large pieces of faience substituted for tile patterns in the panels. Nos. 7 to 9 are dado patterns. Nos. 10 and 11 are base or frieze patterns. Plate IV is of wall or frieze patterns, showing the indication of large pattern by the use of tile of two tones or of two colors. Contrasts should not be violent in designs of this type. If circles and parts of circles, ovals and leaf-shaped tiles are added, these patterns become still more interesting by the consequent introduction and contrasts of curved and straight lines.

RECTORY, 209 MADISON AVENUF, NEW YORK.
Edward P. Casey, Architect.

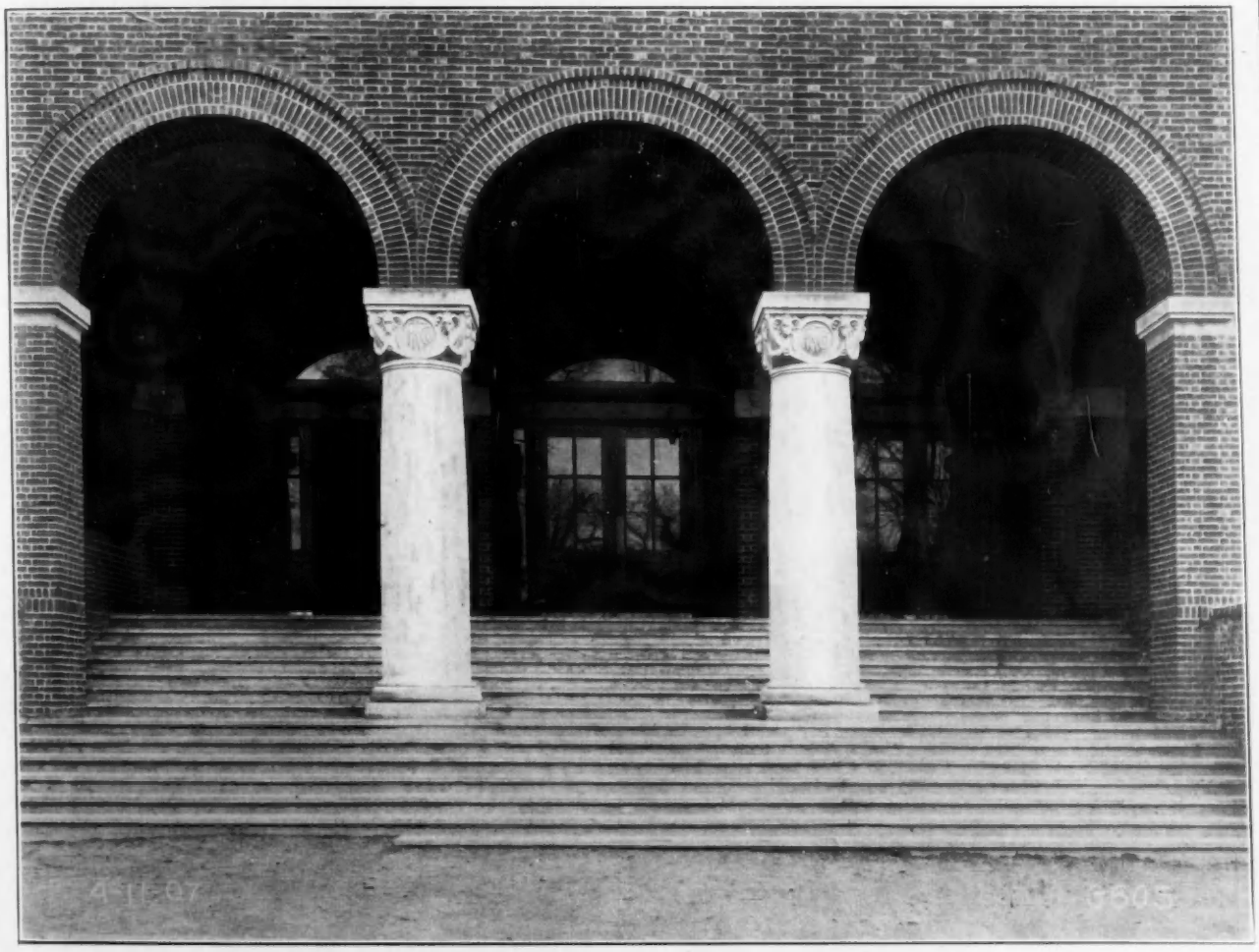


OFFICE BUILDING, PEARL AND BROAD STREETS, NEW YORK.
Kirby, Petit & Green, Architects.

MARKET STREET FRONT

VIEW FROM TERMINAL PLATFORM

MARKET STREET TERMINAL STATION, PHILADELPHIA RAPID TRANSIT CO.



DETAIL OF MAIN ENTRANCE, MARKET STREET TERMINAL STATION, PHILADELPHIA RAPID TRANSIT CO.

R. C. Heath, Architect

Editorial Comment and Selected Miscellany

THE FALLACY OF THE AVERAGE.

WE had occasion some time since to look through the reports of a number of tests which had been made to determine the tensile strength of cement. From these tests certain empyrical formulas were worked out adopting as constants the average resistance. Out of six experiments made with neat cement two of the briquettes broke away below the average, in one case falling to one hundred pounds below the average. On tests of one to three mortar half of the experiments gave resistances below the average, one case being twenty-two per cent less than the average. This arouses a natural query. Suppose out of six actual concrete beams, proportioned on the assumption of the constants determined by these experiments, that there had been as much variation from the average as was shown by the tests; could that construction fairly have been called safe? Those who remember the days before Professor Lanza's epoch-making experiments with full-sized, hard pine beams, will recall how our notions of the strength of wood were based upon experiments with pieces of selected timber one inch square, one inch deep and one foot long, which were carefully broken in two by an applied load at the center, and from the observed results of such academic experiments we proportioned our wooden floors. It is small wonder that in the light of Professor Lanza's minimums we now find steel almost as cheap as wood at its minimum strength. The fact is, that to take the average of a number of experiments and assume that as a safe guide in actual construction is extremely risky, unless we can be sure that the material when finally constructed in the building will in every case be up to at least the average grade, a condition which rarely obtains; consequently prudence would seem to dictate that it is not safe to take the average strength, but rather in determining constants for building construction, they should be derived from a fair minimum.

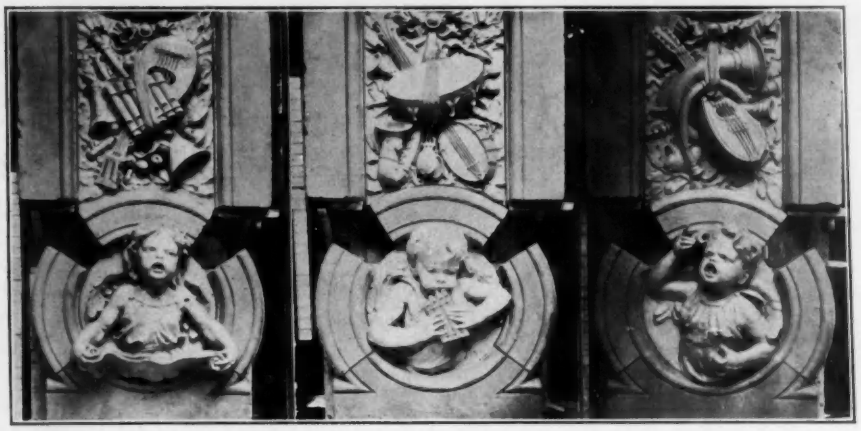
AN ENAMEL FINISH TERRA COTTA "SKYSCRAPER" BEING GIVEN ITS ANNUAL BATH. THERE ARE ABOUT 200,000 SQUARE FEET OF EXTERIOR SURFACE WHICH IS WASHED EVERY SPRING AT A COST OF $1,000.
THE RAILWAY EXCHANGE BUILDING, CHICAGO.
D. H. Burnham & Co., Architects.
Terra Cotta by Northwestern Terra Cotta Co.

UNITED STATES EXPRESS BUILDING, TRINITY PLACE, NEW YORK.
Clinton & Russell, Architects.
Exterior of White Terra Cotta, made by New York Architectural Terra Cotta Co.

UTOPIA.

WHO will say that imagination has departed from the speculative builder? A most interesting scheme is now being worked out in one of our large cities. It is proposed, in all seriousness, to construct an island in an arm of the sea partly enclosed by the city, to be trav-

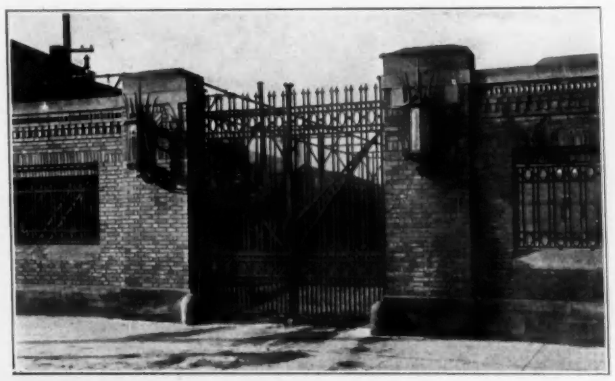
ersed by a bridge connecting each way to the main land, the whole island to be roofed over, streets and houses and all, heated in winter time, partially shaded in summer, so that there will be no more snow and ice and no more scorching sunbeams, but a delicious sub-tropical hothouse atmosphere will be maintained all through the year, the island being of small extent, covered with the most exclusive apartments, a single street occupying the center of the length, with a church at one end, a small theater at the other, and with the houses having one front towards the principal street and another front looking out over the water. And this utopian ideal was conceived by a hard-headed builder with the assistance of an enterprising newspaper reporter!

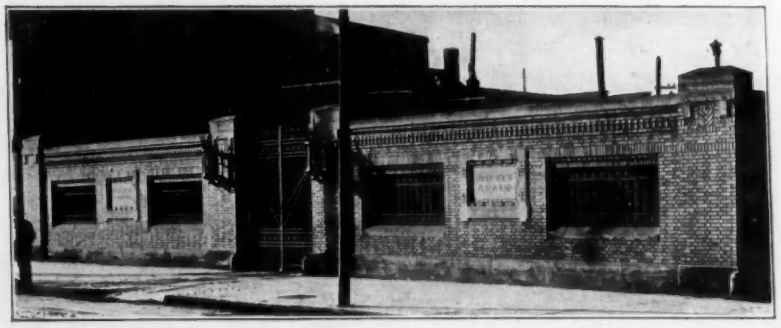


EXECUTED IN POLYCHROME GLAZED TERRA COTTA BY ATLANTIC TERRA COTTA CO.
Herts & Tallant, Architects.

SUBWAY CONSTRUCTION.

WE are in an era of subway construction. A great deal has been done well in New York, some of it has been done fairly well elsewhere and a great deal more of it has been done in various cities without any regard to architectural effect or with any consideration for anything except strength and free access for the public in and out. A vast system of subways is proposed for Chicago, other cities will undoubtedly follow, and it is the logical and natural means of rapid communication for all of our large cities. There is no reason, however, why a structure entirely underground should not be built as thoroughly and in as orderly a manner, and with as much regard for appearance, as a structure entirely exposed in the open air. Such has not been the case in the past in this country, and we have yet a great deal to learn from France and Germany in this particular. Our subway stations below ground ought to be no less serious in their treatment than our upper railway stations. The Transit Commission of Boston are devising means to line their stations throughout with enameled tiles and terra cottas. There are plenty of mediums at hand, and there is no good excuse for continuing the kind of unfinished cellar construction for our subway stations which has been the rule rather than the exception in the past.





THE WILLIAM H. HUNT FENCE AND GATEWAY, HIRAM (SETTLEMENT) HOUSE, CLEVELAND.
Charles S. Schneider, Architect.

WIND STRAINS.

THERE has been at various times a great deal of discussion among engineers as to the rôle which is played by the forces of the wind acting against a framed structure. The problem is quite indeterminate, as far as regards actual experiments. There were some valuable data collected at the time of the very short-lived tornado in St. Louis a few years ago which wrecked a surprisingly small number of buildings, and which established velocities from which were deduced certain pressures per pound supposed to be exerted by the wind. And yet in this very tornado it was observed that the effect of the wind was not to blow the glass in, but to break it by forcing outward. If this is the case, why is it fair to assume a great wind pressure against the outside of a building? Again, in lesser degree, a great deal has been written about the wind pressure on the Flatiron Building in New York, and that structure was, in fact, designed for a wind stress of something like thirty pounds per square foot, if we are correctly informed, and yet it is doubtful if there is a single plate-glass window in the building that would for a moment stand a load of thirty pounds over every foot of its area. It is to be hoped that experiments may be made ere long on a large scale which may either definitely settle the actual amount of stress resulting from certain wind velocities, or will, as we

DETAIL BY SOUTH AMBOY TERRA COTTA CO.

think, more likely set at rest forever the apprehension that the wind would possibly blow at the same time over any great area of a building with a uniform pressure; or, in other words, prove that the necessity for providing against wind strains in a modern building is so extremely slight that it can be disregarded in first-class constructions.

CHICAGO'S NEW COURT HOUSE TO HAVE ONE FLOOR OF VAULTS.

ONE of the twelve floors in the new Cook County Court House, Holabird & Roche, Architects, will be devoted entirely to vaults which are to hold the valuable documents and records. These vaults will all be enclosed with tiles of double the ordinary thickness. The windows at this story are provided with metal frames and wire glass. Every column in the building is covered with two inches of porous hollow terra cotta, bound by copper wire. All pipes are set outside the column protection, and are themselves protected against fire by another covering of three-inch hollow tile. The partitions and floors are made of this same fireproofing material.

BUILDINGS FOR THE PHILADELPHIA RAPID TRANSIT COMPANY.

(SEE PLATE FORMS.)

THE sub-stations are really small power houses at which the alternating current generated at the main station is converted to direct current, from which it is distributed. The Terminal Station is the western terminus of the Market Street Elevated Passenger Railway Company. The building is a combination station and will be used not only by the Philadelphia Rapid Transit Company, but by the Philadelphia and Western Railway Company as well. Tiles have been used in the exterior walls of these buildings in combination with the brick, which are laid with red stretchers and black headers.

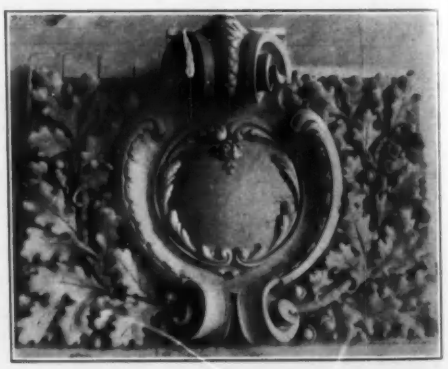
DETAIL BY RUHE & LANGE, ARCHITECTS.
Ketcham Terra Cotta Works, Makers.

A SMALL BUSINESS BLOCK, CHICAGO.
Louis Sullivan, Architect.

BUILDING OPERATIONS FOR JUNE.

OFFICIAL building reports from some fifty of the leading cities of the country, received by the *American Contractor*, New York, and tabulated, show in the aggregate value of building permits granted in June, 1907, as compared with those for the corresponding month of last year, very nearly equal, the losses slightly predominating. Some cities show astonishing gains and others equally remarkable losses. This is largely due to the issuance of large single permits during June, 1906. For the most part, the construction business of the country is moving forward in an orderly, conservative and highly satisfactory manner, the total reported loss being a very small fraction of one per cent. When the immense amount of building done last year is taken into account, this must be regarded as indicating that our present large operations are quite normal and may well be expected to continue, since the freely predicted reaction has not materialized. The following figures show the percentage of gains in leading cities: Birmingham, 68; Bridgeport, 76; Chicago, 9; Chattanooga, 214; Denver, 7; Detroit, 58; Evansville, 57; Harrisburg, 41; Indianapolis, 124; Louisville, 17; Minneapolis, 45; Nashville, 37; Omaha, 18; Pittsburg, 11; Spokane, 442; Salt Lake City, 667; Topeka, 167; Tacoma, 104; Washington,

DETAIL BY HOLABIRD & ROCHE, ARCHITECTS.
American Terra Cotta Co., Makers.



DETAIL BY EAMES & YOUNG, ARCHITECTS
Winkle Terra Cotta Co., Makers.

13. Losses are indicated by the following figures: Buffalo, 34; Cleveland, 16; Dallas, 33; Duluth, 39; Grand Rapids, 36; Hartford, 9; Kansas City, 46; Los Angeles, 36; Milwaukee, 47; Mobile, 73; New Haven, 39; Newark, 10; Greater New York, 9; Philadelphia, 11; St. Louis, 33; St. Paul, 29; Syracuse, 34; Toledo, 9. A gain of 9 per cent in Chicago and a loss of only 9 per cent in New York shows the great regularity of building operations.

HOUSE AT JACKSONVILLE, FLA.
H. H. Waterman, Architect.
Roofed with Red Vitrified Spanish Mission Tile. Cincinnati Roofing Tile Terra Cotta Co., Makers.

IN GENERAL.

Albert Kelsey and Paul P. Cret have been adjudged winners in the competition for the new buildings of the International Bureau of American Republics, to be erected in Washington. Three cash prizes were also awarded. The first, $3,000, was won by Edward Pearce Casey and Arthur Dillon, associated, of New York; second prize, $2,000, John Russell Pope, New York; third prize, $1,000, Peter de Gelleke, Jr., and William T. L. Anderson, associated, New York.

The Pittsburg Architectural Club will hold its fourth annual exhibition in the Art Galleries of the Carnegie Institute during the month of November, 1907.

At the opening of the session of 1907–1908 there will be offered in the College of Technology, Tulane University of Louisiana, New Orleans, a course in architecture, extending, like other regular courses, through four years, and leading to a collegiate degree.

John J. Earley entertained the Washington Architectural Club at a "smoker" in his new studio on the evening of July 10.

George W. Hellmuth and Louis C. Spiering, architects, have formed a co-partnership under the firm name of Hellmuth & Spiering; offices 502 Equitable Building, St. Louis, Mo.

Charles G. Badgley, architect, has removed his office from Fairmount, W. Va., to Seattle, Wash.

DETAIL BY HERMAN MILLER, ARCHITECT.
Conkling-Armstrong Terra Cotta Co., Makers.

M. E. CHURCH, MONTCLAIR, N. J.
Van Vleck & Goldsmith, Architects.
Roofed with Ludowici-Celadon Tile.

L. A. H. Koeth, architect, Wilmington, N. C., has taken a suite of offices in the Southern Building. Manufacturers' samples and catalogues desired.

Enameled brick made by the American Enameled Brick and Tile Company will be used extensively in twelve new schoolhouse buildings, which are being erected in and about New York City; in two large buildings for the Brooklyn Rapid Transit Company; in six new packing houses being erected for Armour & Co. and Swift & Co.; for the exteriors of two buildings at Pittsburg; in the Geographical Laboratory at Washington; in the Cadets' Quarters at Annapolis; two private garages at Greenwich, Conn.; the new court house at Portland, Me.; the new Hippodrome at Cleveland, Ohio; exterior of an office building at Youngstown, Ohio; exterior of an office building at Detroit, Mich.; an office building at Woonsocket, R. I.; First National Bank building, Bridgeport, Conn.; and St. Raphael Hospital at New Haven, Conn.

LIBRARIANS AND ARCHITECTS.

So habitual has it become for librarians, in discussing library buildings and plans, to make wholesale criticisms of architects, and to assume towards them an attitude of superior wisdom, that it is said, on the authority of one of the leading architectural firms of this city, that architects are coming to feel a grievance against the library profession, and are somewhat loath to enter competitions for library buildings. Commenting on this situation, a librarian, who has perhaps had as much to do with architects and building plans as any in this country, recently expressed to the writer the opinion that the attitude thus assumed by librarians was based chiefly on ignorance and narrowness, and was likely to do both the library and architectural profession a real injury. What ground there is for this feeling on the part of librarians, he said, is found in the defects of a few conspicuous buildings,

DETAIL BY BARNETT, HAYNES & BARNETT, ARCHITECTS.
St. Louis Terra Cotta Co., Makers.

built at a time when the full demands to be made by the public upon the buildings were realized neither by librarians nor architects. Of late years, he said, architects have been studying with great care and minuteness the economic and practical demands of library buildings, and, as a whole, are now far in advance, even in these matters, of the average librarian. From an experience gained on many building committees, by some of which buildings costing millions have been planned, he has come to the conclusion that the librarian, even in his own field of library economy, has much to learn from the professional architect. — *N. Y. Evening Post.*

YSLETA CHURCH BURNS.

THE oldest church edifice in the United States was destroyed by fire the other day. The ruins of adobe and stone are to be removed, under the direction of the Catholic Church authorities, and a thorough search made for hidden treasure, which, according to legends that have been handed down for generations, lies buried beneath the floor of the building. The records go to prove that Ysleta, Tex., is older than St. Augustine, Fla. In the records of the great cathedral of Madrid, Spain, is found the report of Marcus de Niza, a French monk, who says that he left the City of Mexico and made his way north, finally crossing the stream that is now known as the Rio Grande. He says that he followed the road that he left for his mule to take. Part of this manuscript is written with the blood of a deer for ink, and his own forefinger nail for a pen. He says that in 1537, across the Rio Grande, he found the village known as Ysleta, occupied by the Pueblo Indians, whose traditions all point to their having been of the ancient Aztec race, or to a people of even more remote origin. Franciscan missionaries arrived at Ysleta four or five years later, and the mission church which was destroyed by fire a few days ago was erected. It was completed about 1550. In many respects it was the most unique mission building in the Southwest. Owing to the fact that it was remotely situated it was seldom visited by tourists, and little has ever been written about it. It was a very large structure, and was built with the idea of serving as a fortress in case of attack by Indians, as well as for worshiping purposes. The walls were four feet and six inches thick. It was the boast of the worshipers that the candles which burned at its altar had shed their light continuously for more than 350 years. It was one of these candles that caused the destruction of the church. — *Boston Transcript.*

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